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LECTURE II.

THE views of the older writers on the subject of injuries to bones are worthy of study. In the process of literary excavations we come across some useless débris, but here and there are found nuggets of pure gold.

FRACTURES OF THE NECK OF THE FEMUR.

Astley Cooper, whose investigations are so imposing in the history of the surgery of bones, explicitly states that in all cases of transverse fracture of the neck of the femur which he has had the opportunity of examining, he has never seen one in which there was union by bone. "The dissections which I have made," says this illustrious surgeon, "have convinced me that fracture of the neck of the femur, when it is situated within the capsule, is never united by bone. The union is solely effected by means of ligamentous substance, as in fracture of the patella." "This celebrated surgeon," says Dupuytren, "has since modified his opinion, as we find him remarking that, as a general rule, fracture of the neck of the femur within the capsule is united by ligament and not by bone, as in the case of the olecranon and the patella, but that it would be a rash assertion to deny the possibility of ossific union, and to maintain that the general rule laid down admits of no exception."

This was more or less the teaching up to our own time. Fifteen years ago I treated an aunt of my own, aged 70, in a plaster case with abduction and internal rotation, and obtained bony union.

One of the first statements made by Dupuytren, in an essay on fractures of the femur, is that he never saw a fracture of the neck of the femur in a child. We know now this is not uncommon, and after such a statement we wonder whether it is worth while referring back to authorities of the pre-X ray era. The reason I do so is this—that credit must be given to Dupuytren for anticipating to some extent the modern work of Whitman, Jones, and other authorities for whom we all have such deep respect.

Dupuytren points to specimens in the Museum of the Faculty of Paris and of the Hôtel-Dieu, where numerous examples of intracapsular fractures united by bone are to be found, and states that he regarded osseous union of intracapsular fracture of the neck of the thigh bone as demonstrated beyond doubt. He disproves and discounts all arguments advanced at the time against the possibility of bony union. He denied that the upper fragment was devoid of sufficient blood-supply, and showed that the vessels passing to the head via the ligamentum teres were sufficient. The importance of the ligamentum teres in preserving the viability of the head of the femur has been established beyond doubt by Bonn.[1] Dupuytren showed that the neck of the femur is not devoid of periosteum, as stated by some contemporaries, and that the bathing of the fragments in synovial fluid could not be a determining factor in connexion with non-union, as it does not affect the union of fractures into other joints.

But then comes this significant statement. "The fact is, that the great difficulty lies in the perfect and accurate adjustment and relation of the fractured ends of the bone," and he insinuates that if this can be accomplished bony union may be expected. He was a shrewd observer, for he realised that union in this situation must be slow, and suggests as an axiom that fractures of the neck of any bone should be kept at rest twice as long as ordinary fractures of the same bone, and even after that period displacement might occur.

He does not seem to have realised the full importance of abduction, but his description of the reduction of a fracture indicates that he was not oblivious to its significance. He describes his procedure thus: "The patient being placed on his back, and the pelvis being fixed by assistants, I bend the thigh on the belly by raising it, and then gently draw it from the body, the knee being at the same time flexed. This is immediately followed, without difficulty or the employment of violence, by the limb resuming its natural length and the foot its normal direction." By flexion he relaxed the adductors which produce eversion of the foot, and the glutei and others which draw upwards the shaft of the bone. He adopted the principle of Percival Pott, who introduced the flexed position of limbs in the treatment of fractures generally. He designed a double inclined plane splint, the thigh being fixed at nearly a right angle to the pelvis and the leg forming a similar angle with the thigh. He says by this method union takes place without shortening, and quotes some convincing cases.

Although abduction is the essential feature in the treatment of fractures of the femoral neck, the arguments of Dupuytren in favour of the double inclined plane are impressive. His reasoning is so persuasive that I wonder why this old method fell early into disuse and was supplanted by so unsatisfactory a treatment as weight-and-pulley extension. If there is any one thing I am proud of in the treatment of fractures over the last 25 years, it is this—I have never used a long Liston splint, and I have never treated a fracture of the neck of the femur by Buck's extension.

It is interesting to note that in 1921 Moore contributed an article in the *Boston Medical and Surgical Journal* recommending that the fracture be reduced under an anæsthetic, and the leg put up in right angle flexion of both hip and knee in a plaster cast. In this way the patient can sit up and be moved about in a wheeled chair from the very first. Out of 42 cases so treated by this method, the average age of the patients being 65 years, 60 per cent. gave a good result.

If the thigh is flexed at right angles with the abdomen and the knee at the same angle with the thigh, the relaxation of the muscles tends to prevent shortening, and any progressive power of contractility which follows after this position is assumed cannot assert the direct pull which produces shortening when the limb is extended. Flexion of the leg corrects eversion of the foot, as was pointed out by Dupuytren in 1846, and again in an excellent paper by Russell as recently as January, 1924, in which he says: "That upward lifting of the bent knee is the natural way of inverting the limb when we wish to correct eversion. Instinctively we first bend the knee and then lift it upwards. The practical fact is that eversion gives no trouble."

Fractures of the Neck of the Femur in Children.

First importance attaches to the partial fracture-separation of the epiphysis of the head of the femur. The condition is most often found in or about puberty, more often in boys than in girls. It may arise out of some comparatively trivial and forgotten trauma. Any displacement which occurs may be gradual, the diaphysis yielding in an upward direction and becoming gradually rotated outwards in relation to

* All the cases referred to were illustrated by lantern slides. Lecture I. was published in THE LANCET of August 15th, p. 313, and Lectures III. and IV. will appear in subsequent issues.

[1] Arch. f. klin. Chir., 1924.

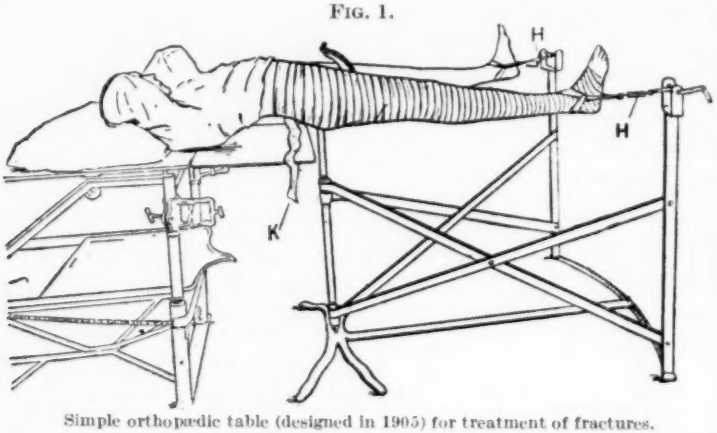
the head. Solid union takes place, leaving behind a traumatic coxa vara.

It is a difficult injury to diagnose early, even with the help of X rays, and Sir Robert Jones says it is the most often overlooked of all hip injuries, even by extremely good surgeons. It is suspected when rotatory movements are extremely painful, and when abduction beyond a short range is impossible. There is, at first, no shortening, and the symptoms disappear with rest, but later on, when activities are resumed, shortening occurs, and separation of the epiphysis, partial or complete, will be then recognised. In contrast to this, there may be a complete separation of the epiphysis, a fracture through the neck, or a fracture involving both neck and epiphysis.

Whitman calls special attention to fracture of the neck of the femur in children. The fracture occurs after traumatism to the hip, probably more frequently than separation of the upper epiphysis. It is generally impacted or of the greenstick variety, but the signs and symptoms are much the same. The immediate results are good, but yielding at the point of fracture will produce a coxa vara if the limb is not protected from weight-bearing for many months by a calliper splint. The immediate treatment, whatever the position of the fracture may be, is the same as in adults. Shortening and eversion must be reduced, with subsequent fixation in the position of abduction.

To obtain reduction; flexion and inward rotation followed by traction and abduction, or abduction alone, are required. Seven cases of ununited fracture of the femur in early life are mentioned by Whitman, to prove that non-union may follow this injury in childhood if the treatment is inefficient. Thus he shows that non-union is not accounted for by deficiency of blood-supply, nor by advancing years, but by inefficient treatment. Plaster-of-Paris fixation is the best, and after six or eight weeks the child may be allowed to walk on a calliper splint for two or three months. If the fracture is diagnosed and no displacement has occurred, a short period of rest followed by ambulatory treatment with a calliper splint is sufficient.

FIG. 1.

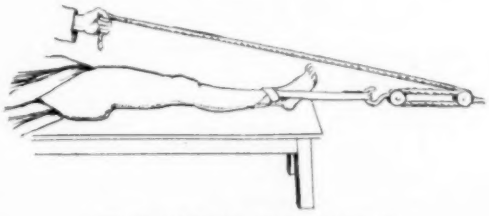


Simple orthopædic table (designed in 1905) for treatment of fractures.

Fractures of the Neck of the Femur in Adults.

I do not think, from the point of view of treatment, that it is necessary to say more than this—that if, in a strong adult, a fracture is impacted, and there is more than half an inch shortening with eversion of the foot, the impaction should be forcibly broken down under an anæsthetic, the deformity reduced, and the treatment carried on as in unimpacted cases. Rotation outwards of the foot matters much more than a little shortening. If the foot is in good position without any outward rotation and the shortenening is inconsiderable, then it is not necessary to disimpact. If there is impaction in an old person, all the circumstances must be carefully weighed before the impaction is broken down to reduce moderate deformity; but it must be remembered that the so-called impacted fracture from indirect violence in elderly people is very incomplete, and functional disability will certainly follow weight-bearing in the absence of proper reduction. A decision must be made as to whether, in an exceptional case, the risk of reduction and fixation is too great.

FIG. 2.



Block and tackle extension (Jones).

Under such circumstances, crippling, non-union, and deformity must be the result, mitigated to some extent if a calliper splint can be worn.

The object of treatment of this, as of all fractures, is to restore the symmetry of the broken bone, thus eliminating the primary cause of non-union, deformity, and loss of function. Henderson states that of 120 cases of ununited fracture of the hip seen at the Mayo Clinic, not one had received proper treatment at the time of the injury.

The modern treatment can be summarised in one sentence—reduction of the deformity and fixation in the abducted position. Whitman deserves due credit for insisting upon these conditions. Abduction is checked by tension on the capsule, by contact of the upper border of the neck with the rim of the acetabulum, and of the great trochanter with the side of the pelvis. In abduction the neck of the femur is normally in a horizontal position. In fracture of the neck the fractured end of the proximal fragment points laterally, and it is only by bringing the distal end of the neck into a horizontal position that accurate apposition of the fragments can be made. Not only are the fragments brought into apposition by full abduction of the leg, but the tension on the capsule provides for direct mutual pressure of the fractured surfaces. The trochanter being in contact with the pelvis, any muscular effort likely to displace the fragment is impotent, and fixation is complete.

If absorption of the neck and shortening and stiffening in the movements of the hip result after the abduction treatment, the tilt downwards of the pelvis on the affected side, in order to bring the two legs parallel for locomotion, will correct the shortening. If adduction follows treatment of an injury to the hip, the reverse is, of course, the case. The abduction treatment is now the standardised routine. To encourage us further, Whitman points out that the fracture in the aged is usually at the base of the neck, and that the central fracture is more common in the young and the vigorous. The reverse of what was formerly believed. Bearing this in mind, and also that fractures elsewhere unite readily in aged subjects, we have every ground for optimism when considering the prognosis of these cases.

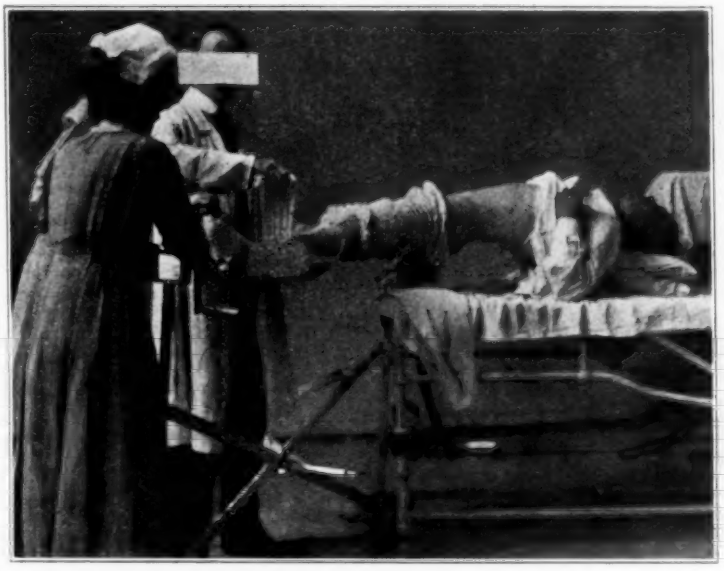
It may be confidently predicted that the immediate and efficient treatment of fractures of the neck of the femur by the abduction method will be followed,

in most instances, by repair. If union fails when accurate apposition of the fractured surfaces has been maintained for a sufficient time—as confirmed by X ray examinations—it indicates a low vitality in the tissues, and Whitman advises in such cases a reconstruction operation which will be mentioned later.

In 1905 [2] I designed an apparatus for the reduction of fractures of the lower extremity which resisted manual traction, and in the absence of one of the more perfect tables of the Hawley type, I still find it useful. The original cost was £2 10*s*. (Fig. 1.)

The apparatus consists simply of two iron gates, about 4½ ft. long, swung on an upright which carries a perineal bar, attached to which is a small support for the sacrum of the patient which is included in the plaster, but afterwards removed. This pelvic support and the upright on which it sits are supported by a heavy stand. On the distal ends of the gates are rollers, square on section, in order to obtain a firm hold on the cords or bandages when extension is being applied. By pushing the handle inwards the square bar fits into a hole of the same shape and diameter, and so locks. This is a simple substitute for a ratchet. Fixed to the stand, and running at right angles to it along the floor between the two gates, is a bar, and the distance of the gates from this bar indicates the exact amount of abduction and enables plaster to be applied with both legs spread from the pelvis at equal angles. In this way there can be no obliquity of the pelvis. If it is desired to note the exact amount of extension required to hold the fracture reduced two Salter's sportsmen's balances, registering at least 50 lb., are necessary additions.

FIG. 3.



Application of plaster of Paris for fractured hip.

I have found the apparatus useful in all recent cases of fractured femur in any position where shortening could not be reduced with ease, and in the treatment of malunited fractures. It provides a substitute for the block-and-tackle pulley arrangement as a means of reducing the overlapping and shortening in the latter group, and it facilitates the application of plaster of Paris when employed during the treatment (Fig. 2).

Reduction of an Intracapsular Fracture of the Neck of the Femur.

The patient is anæsthetised. The gates are brought to the end of the table, and the patient is put astride the padded perineal crutch. Manual traction and manipulation is usually sufficient for reduction, but by attaching the foot to the end of the gate, extension and abduction are readily obtained, and the application of the plaster of Paris rendered very simple.

It is best to apply the plaster to the foot and lower third of the leg in the first instance, and when this has set a clove-hitch or a wet skein of wool, passed round the ankle and over the foot in figure-of-eight fashion—as recommended by Watson Cheyne—is connected with the ratchet. These connexions may be incorporated in the plaster bandages used to complete the cast before the extension is released. Or, alternatively, a steel pin is passed beneath the tendo Achillis in contact with the os calcis to act as a connecting link between the foot and the ratchet. The steel pin is removed when the plaster coat is complete.

The limb on the sound side is held abducted to the normal limit by an assistant who stands at the end of the gate, or it may be attached to the rachet by a clove-hitch. The surgeon notes the normal range of abduction on the uninjured side. The knee and the thigh are kept slightly flexed by a sling under the knee from the upright bar which is attached to the gate. This flexion corrects the inversion of the foot. The injured leg is extended by tightening the ratchet, slowly abducted by moving the gate, and rotated inwards with the hands. The surgeon or an assistant supports the joint and presses the trochanter gently downwards. The neck of the bone is first felt to hitch on the upper border of the acetabulum, but this obstacle is easily overcome. Abduction is continued until the normal range is obtained. The trochanter rests against the side of the ilium, and the anatomical relationship between the shaft and the neck of the femur is now restored. The limb is in the Whitman attitude of extension, complete abduction, and slight inward rotation. Plaster of Paris is rolled on with great facility, with the aid of this apparatus. The plaster is allowed to dry with the patient still in position on the gates. (Fig. 3.)

In the ward the head of the bed is raised one or two feet, an inclination the reverse of that required for traction. It is more comfortable, and Whitman thinks that the influence of this position on the blood-supply makes the chances of repair more favourable.

The completed spica (Fig. 4) is retained in position for from 8 to 12 weeks, and several more weeks are spent in bed for treatment with massage and the restoration of movements in the joints. Weight-bearing is not permitted until the movements of the joints are free and painless, and X ray photographs indicate the stability of repair.

Jones treats these cases on his abduction frame slightly modified. In very feeble patients who are bad surgical risks, a Thomas splint slung out over the side of the bed is substituted, the sound leg being kept in abduction by sandbags.

Waldenstroem [3] says there is a marked difference between the results obtained when the fracture is held by a plaster cast and when it is held by extension. When a plaster cast is used, out of 15 cases 11 gave good results, 8 with bony union. In 13 cases treated by extension methods there were three good results. Bony union resulted in two.

The treatment of fractures of the neck of the femur may be summarised as follows:—

1. In all subjects, of whatever age, reposition of the fragments should be attempted, unless the patient is too frail for treatment, and then the fracture must be neglected. Sometimes, but not often, such a patient can endure walking on a calliper splint, but in the majority the rest of their lives will be spent either in bed or in a chair.

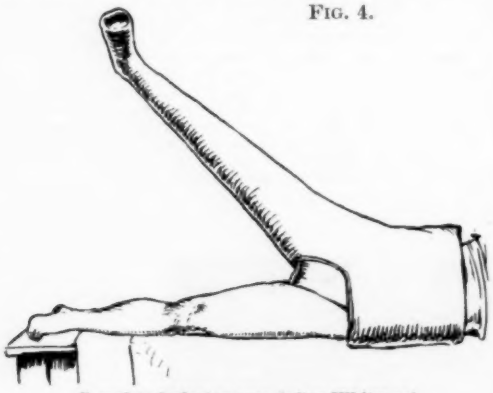
[2] Medical Press and Circular, March 8th, 1905.

[3] Jour. de Chir., 1924.

2. When the fracture is reduced under anæsthesia, a plaster-of-Paris splint, as described by Whitman, is the most effective appliance.

3. To apply a plaster case properly for this fracture, some form of orthopædic table is most desirable, but

FIG. 4.



Completed plaster case (after Whitman).

a perineal prop with pelvic support which clamps on to any table, gives immeasurable help.

4. In the absence of a perineal prop, counter-fixation of the pelvis during reduction is accomplished by passing a strong bandage round the groin on the sound side, and tying it to the table near the patient's head.

5. In cases unsuitable for plaster, good abduction and extension can be maintained on Jones's frame, or the injured limb may be slung in a Thomas splint in abduction over the side of the bed, and tilting of the pelvis prevented by supporting the sound leg in abduction with sandbags.

6. The position of abduction should be maintained for at least two months.

Two recent cases illustrate the above remarks.

A woman, aged 79, was knocked down by a bicycle in 1923. She was treated by the abduction method after reduction under an anæsthetic. She has firm bony union, there is no shortening, and no loss of movements in the hip-joint. In January last I wrote asking her to report. She replied as follows in February: "My injured hip is as well as ever. I have no lameness, do not use a stick or crutches, I have no pain or limp, and have full movements."

A man, aged 70, was admitted in 1923. He was feeble and difficult to manage, and was treated by a Thomas splint slung in abduction over the side of the bed in extension; he was under supervision for three months in hospital. He reported three weeks ago, walking on crutches, with slight crutch palsy. He would not wear a calliper splint; 1½ in. shortening. Full movements of flexion and extension; strong fibrous union. With a little encouragement he discarded the crutches, but walks with a marked limp.

In this case no anæsthetic could be given, and there was no attempt at orthodox reduction. An X ray plate showed clearly an atheromatous artery in the pelvis, which is an indication of the senility of this patient, although nine years younger than the case referred to above.

Whitman's Reconstruction Operation.—Whitman has designed a reconstruction operation for old-standing cases, where absorption of the neck has taken place and where the functional result is poor. He believes that this operation is to be preferred to bone-grafting. The operation is designed to relieve pain, and to restore early capacity in vigorous subjects. The base of the trochanter is cut through in an oblique direction with a chisel, the obliquity corresponding to the angle of the neck. A new neck is thus formed, and is thrust into the acetabulum with the leg in abduction. The trochanter is drawn downwards and is secured by a peg to the femur at a lower level.[4]

FRACTURE OF THE TROCHANTERS.

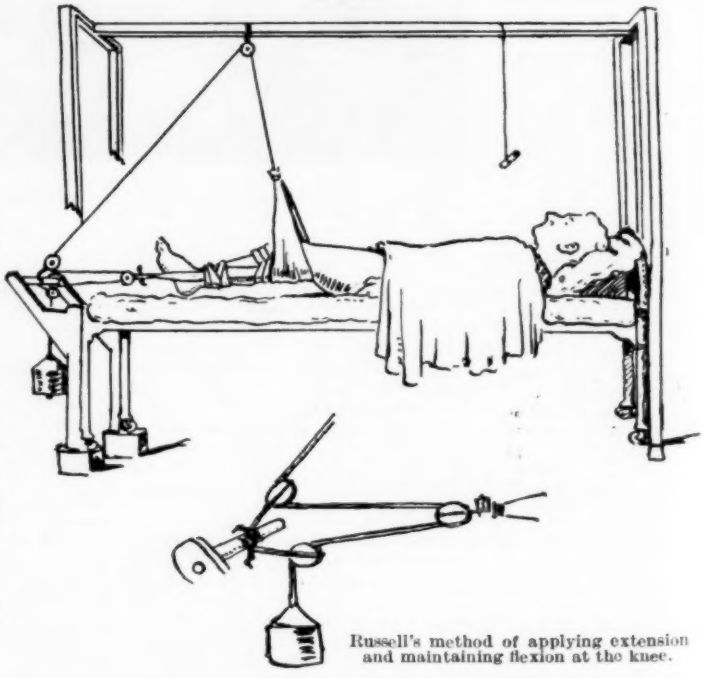
In subjects under 18 years, epiphyseal separation of the great trochanter is not uncommon. Fracture of the great trochanter is rare. When it occurs the trochanter is displaced upwards, and the best apposition can be obtained by the abduction method of treatment.

Langdon[5] reports two cases of fracture of the lesser trochanter. Only 25 are recorded in the literature. Langdon's cases were those of boys 12 and 16 years of age. The cause is said to be a sudden strain on the ilio-psoas muscle, causing avulsion. The pathognomonic sign is inability to flex the injured limb in the sitting position. Poston[6] also calls attention to this injury, in a boy aged 14. The treatment in the early cases was very variable, but notwithstanding the difficulty of getting accurate apposition and reduction, the results were uniformly satisfactory. Operations are therefore contra-indicated. In Poston's case a plaster spica with the thigh flexed at the hip was applied for 14 days, and afterwards treatment was carried on by massage and passive movements. He had full recovery in 36 days.

FRACTURES OF THE SHAFT OF THE FEMUR.

General Considerations.—Seventy-five per cent. of the fractures of the femur seen at the Mayo Clinic present

FIG. 5.



Russell's method of applying extension and maintaining flexion at the knee.

mal-union, non-union, delayed union, chronic osteomyelitis, or joint stiffening following treatment elsewhere. This is the statement of Meyerdine in the "Mayo Clinics" of 1923, and it is a severe

[4] A complete description of the operation appeared in Surgery, Gynecology, and Obstetrics, June, 1921.
[5] Surg., Gyn., and Obs., Abs., October, 1924.
[6] Brit. Jour. of Surg., October, 1921.

commentary on the treatment of recent fractures elsewhere.

To obtain satisfactory results in fractures of the shaft there are two alternatives open to those surgeons who prefer non-operative methods:—

(*a*) The shortening and deformity may be reduced under an anæsthetic at once by means of powerful traction, if necessary, on a suitable orthopædic table. The limb—including the foot and the lower part of the body—is then encased in carefully applied plaster of Paris. (I do not practise this method apart from cases of fractured hip.)

(*b*) The deformity may be reduced under an anæsthetic, with the knowledge that the reduction will, in most cases, not be maintained completely by any form of splint, but will be gradually restored under the influence of traction and simple contrivances to correct lateral or antero-posterior deviations.

The methods of treatment are much the same, whatever the position of the fracture. When the fracture is in the trochanteric region, it is necessary to remember that the upper fragment is usually abducted, the lower fragment drawn upwards and inwards. Occasionally, when the obliquity runs from above downwards and inwards, the upper fragment may be pushed inwards instead of outwards. It is best to treat these high fractures in abduction, although it is doubtful if the upper fragment remains abducted once the limb is placed in a position of comfortable extension. Notwithstanding this, I think abduction is the best position on the principle of "safety first"—for if union takes place with the lower fragment adducted the functional result is unsatisfactory, owing to the necessity of compensatory raising of the pelvis on the injured side.

Mr. Russell [7] holds that there is only one circumstance which can justify operation in recent fractures of the shaft; that is, mechanical impediment to the reposition of the fragments; this is a sound doctrine.

I would like to say here that in simple fractures of the shaft of the femur, or of any other long bone, it must be an extremely difficult matter for soft structures to impose themselves between the fragments if sufficient extension is applied. All the muscles and other tissues run, for the most part, in a parallel line to the long axis of the bone, and the more they are pulled upon the more there is a tendency to disengage themselves from the line of fracture. When the patient is out of the anæsthetic, muscular tone comes into play, as if there were bands of elastic reaching from the pelvis to the tibia and fibula, and in fracture of the long bones tonic shortening of the muscle will be progressive.

"Our first aim, then," says Mr. Russell, "will be to pull out these muscles to their correct length, and when we have accomplished this we may be sure that every other structure of the thigh will be in its correct position, including the fragments. This does not mean exact anatomical reposition, which is neither necessary nor even, in my opinion, always desirable." This is another fundamental truth, for everyone with experience of the treatment of fractures knows that a slight lateral or antero-posterior displacement of fragments is of no account, provided there is no abnormal angulation or rotation.

FIG. 6.

Fracture of the femur (upper third). Patient in bed after reduction. Note gauze glued to sole of foot to support it at right angles.

There are many observations in Mr. Russell's paper worthy of note. "What must we pull upon?" he says; "clearly the tibia and fibula, seeing the muscles are attached to them. We are going to use strapping and bandages for the extension, and we shall, accordingly, not carry them above the knee for reasons that are obvious. I think that the practice, which seems universal, of carrying the strapping up the thigh indicates some confusion in our mental picture of the object to be attained. Anxiety as regards the ligaments of the knee is quite needless, for, being attached to a fragment, they cannot be subject to stretching. The whole of the extending force will fall on the muscles, none at all on the ligaments. To convince ourselves of this, we only have to reflect that if the muscles were severed at the seat of fracture the limb would drop off." Mr. Russell might have gone further and said that if the ligaments of the knee were pulled upon and loosened after partial union, they very quickly took up the slack during convalescence. (Fig. 5.)

In high-up fractures of the shaft the upper fragment is usually flexed and abducted; the lower fragment is drawn up and adducted. A long-axis pull will correct the shortening, and simultaneously with the pull the limb must be brought into abduction to get proper alignment. These fractures do well in a Thomas splint slung by pulleys to a Balkan frame, with either fixed extension, as recommended by Jones, or a 10 to 15 lb. weight-and-pulley extension attached to the end of the Thomas splint (Fig. 6). The sound leg is kept in slight abduction with sandbags (or slung in a Thomas splint) to prevent tilting of the pelvis, and the foot of the bed should be raised. The foot should be maintained straight, as the

[7] Brit. Jour. of Surg., January, 1924.

temporary rotation outwards of the upper fragment need not be considered.

We must not think too seriously about the displacement of fragments of the shaft by muscular action. It was pointed out by Lucas-Championnière, more recently by Sir Robert Jones, and again by Mr. Russell, that the displacement caused by muscular spasm is only a transient phenomenon tending to disappear when the fracture is reduced and the limb placed in a comfortable position free from pain, but if shortening is not reduced and the extension apparatus is inefficient, progressive contraction of the muscles is to be expected. The temporary nature of muscle spasm is particularly noticeable in fractures of the lower third. Much attention is drawn to the fact that the lower fragment is displaced backwards by the gastrocnemius muscle in dangerous relationship to the popliteal vessels. It is taught that these muscles must be relaxed in the treatment of such fractures, but numbers of surgeons, including myself, reduce them with strong extension without any misgivings whatever. The action of gravity or the tendency to fall backwards, obliterating the natural convexity forwards of the femur, with perhaps resultant genu recurvatum, is easily countered by a sling behind the point of fracture. So much attention has been paid to this in my own cases that many times I have obtained a slight increase of the natural bowing of the femur forwards, but without any undesirable after-effects as regards function.

We should remember that comfort is an essential in the treatment of a fracture. Spasms and counter-spasms occur in the search for relief and the muscles are never at rest, the fragments are disturbed and displacements result.

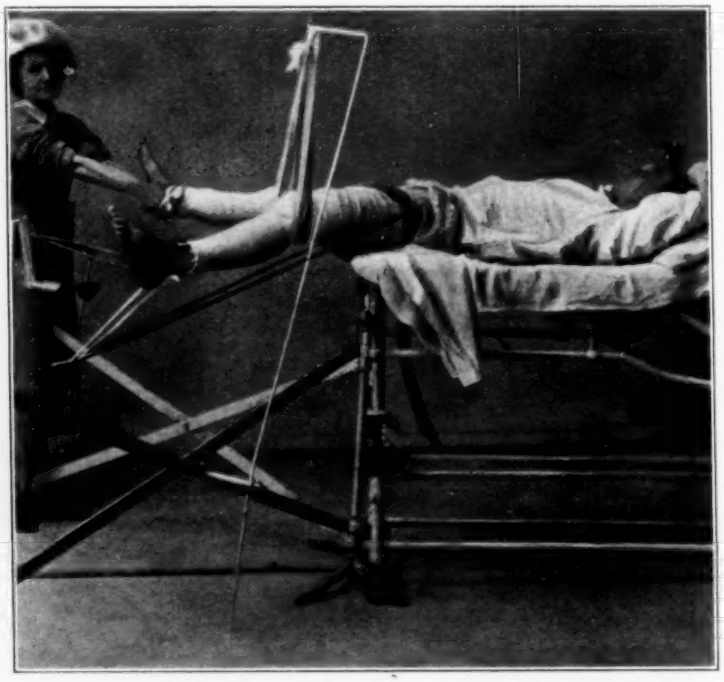
Treatment of Fracture of the Upper Third of the Shaft.

If the shortening can be reduced by manual extension and abduction under anæsthesia, a Thomas splint is applied and the extension tapes secured to the end of the splint while traction is maintained. If there is difficulty in overcoming the shortening at the first try, it is probable that with sufficient and continuous extension the proper length will be obtained within the first week. The Thomas splint is slung over the side of the bed on a Balkan frame in a position of abduction with the sound leg slung or supported by sandbags. (Fig. 6.) In some cases reliance will be placed on fixed extension—i.e., tightening up the tapes frequently as the muscles relax, in others a weight-and-pulley attachment is fastened to the end of the splint. If the strapping tends to slip during the first 10 to 14 days, an assistant grasps the ankle and extends while new strapping is applied. I have had no trouble in obtaining union without shortening by these simple means.

Fractures of the Middle of the Shaft.

There should be no difficulty in the treatment of these cases with a Thomas splint slightly bent at the level of the knee. The shortening is reduced, or as nearly reduced as possible, under anæsthesia, and fixed extension is rigidly maintained to the end of the Thomas by means of the orthodox strapping and tapes (Fig. 7). It is in this position that the action of gravity, causing sagging backward of the fragments and bowing of the femur, must be countered. In rare cases shortening may still persist at the end of a week, and powerful stretching with pulleys or special appliances may be required. To prevent bowing backwards, a tight strip of bandage is clipped to the bars of the Thomas splint directly behind the fracture point; nothing more is necessary, but this band throughout the treatment must be kept tight. If an X ray photograph shows some lateral deviation of fragments, a pull may be exerted from one bar to the other by a loop of bandage round the limb, above or below the fractured bone according to the amount of displacement. Some Thomas's splints are fitted with lateral pressure pads adjusted by a screw arrangement attached to the bars by means of which lateral deviations can be controlled.

FIG. 7.



Powerful extension can be applied from a spat to the rachet. The Thomas splint is then fixed in position, the tapes tied, and the spat removed.

Sir Robert Jones recommends that for further control a gutter-shaped sheet metal splint, extending from the buttock fold to the lower third of the leg with a good wool pad in the hollow of the knee, should be applied. Another grooved splint on the front of the thigh, stopping short above the patella, gives further support. Instead of fixed traction, in certain cases it may be more convenient to apply a weight and pulley of from 15 lb. to 20 lb. attached to the end of the splint.

Fractures of the Lower Third of the Shaft.

The interest in connexion with the treatment of these fractures is owing to the displacement of the lower fragment backwards as a result of the spasm of the gastrocnemii muscles. The upper fragment is usually adducted.

Again it must be pointed out that muscular spasm is only transitory, and Sir Robert Jones quotes an interesting case of compound fracture in which the limb was put in comfortable straight extension, and

the spasm was actually seen to pass off with the gradual disappearance of the flexion deformity of the lower fragment. Nevertheless, when the shortening has been reduced under an anæsthetic, by full extension, the Thomas splint should be bent to half a right angle at the knee before the tapes are secured at the end. A strip of bandage is kept tightly applied under the lower fragment to ensure gradual restoration of alignment. If backward displacement persists, which is unlikely, division of the tendo Achillis is indicated. When reducing the fracture I do not believe there is any real danger in applying full extension without flexing the knee (Fig. 7).

Fracture of the Shaft of the Femur in Children.

I have most experience in the oblique or spiral fractures of the shaft in children, and I was surprised to find in how many cases it was difficult to maintain a good reduction of the fragments. Whatever methods were employed, immediate X ray photographs showed a disappointing result; the final result was all that could be desired.

The Bryant suspension frame is not satisfactory in children over the age of 6 years, as the weight of the body tends to tear off the extension straps and frequent reapplication is necessary. When used in young children more traction will be obtained when only one limb is suspended, but the patient is more uncomfortable and the nursing is more difficult.

In a large series of cases described by Burdick and Siris [8] the favourite method was a plaster spica and traction—118 cases treated. Bryant's frame and suspension was next in popularity—96 treated. Fourteen were treated with a Thomas splint and traction, and two with a Hodgen splint and traction. It was necessary in a few cases to resort to operation.

In my early days I operated on these cases, but subsequent experience showed that in the case of children an apparently bad primary result was followed by an extremely good final result, and X ray photographs taken a year or two afterwards barely indicated the line of the original injury. Not infrequently a child who was discharged from hospital with shortening ultimately presented itself with slight lengthening of the injured limb. In children, more than in others, it is necessary to emphasise the fact that perfect anatomical reduction is not essential for perfect functional recovery. There appears to be a stimulation of the growth of bone in its longitudinal direction, irrespective of the location of the fracture in the shaft.

One of the best methods of treatment is to place the child across a perineal prop, reduce the shortening, apply plaster strapping for subsequent extension, and over this a plaster spica from the malleoli to the ribs with the limb in moderate abduction. A weight-and-pulley extension of 10–15 lb. is employed. The plaster is removed in about six weeks. The continuous skin traction is used not so much to reduce shortening but to try and prevent any change in the relative position of the fragments. In children under 6 years of age extension of the leg in a vertical position to a horizontal bar over the bed is better than the method just described. A small Thomas splint—even small enough to fit a new-born child suffering from obstetrical fracture—also gives good results. A simpler method in infants is to bind the thigh and the extended leg to the front of the abdomen with a bandage. In the process of growth faulty alignment becomes corrected. Union is very rapid in these cases, and all fixation methods may be abandoned in less than three weeks.

A boy, aged 11, was admitted to hospital in 1921 with a transverse fracture of the humerus and a transverse fracture of the femur. Perfect alignment was obtained in the first instance with ease, by means of a Thomas splint, but later lateral displacement of the fragments occurred with ¼ in. shortening. The mother wrote to me in January, 1925, as follows: "He has had no trouble of any kind from it, and now plays football at school. There is no shortening or defect."

This is another illustration showing how absolute anatomical position is not necessary for perfect function; and displacements, when the alignment is correct, may be ignored even more so in children than in adults.

[8] Annals of Surgery, June, 1923.

QUANTITATIVE DATA IN TISSUE REACTIONS TO ULTRA-VIOLET RADIATIONS.*

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ON the purely physical side, the subject of ultra-violet radiation has been very thoroughly investigated, and a logical explanation is available for the behaviour of many inert substances under the influence of the rays. The same cannot be said of the physiological and therapeutic aspects of the subject, for, although certain striking effects are produced on living organisms as a result of exposure to the rays, there are still many processes of whose mechanism we have no exact knowledge.

It is well known, for example, that exposure to the rays frequently results in bronzing of the skin, due to increase of melanin granules in the basal cells of the epidermis. This fact has been associated with a coincident improvement of bodily fitness, and advantage has been taken of it in heliotherapy. At the same time, it is generally admitted by those who have studied a great number of cases that there are unaccountable variations in the response of different individuals to the action of the rays. Some patients pigment well and benefit greatly by treatment; some merely freckle and may not do so well; others again pigment not at all or only slightly, deriving but little benefit from the treatment, though this is by no means invariably true.

If investigation is carried out with a pure beam of ultra-violet rays, instead of employing the full solar spectrum, certain effects are rendered striking which would otherwise be masked.

Fluorescence Under Ultra-violet Rays.

Dr. Mottram and Prof. Russ [1] described in 1920, before this society, the curious appearances seen when objects are examined in a beam of rays from which the visible wave-lengths have been filtered off by means of Wood's glass. The following is a brief quotation from their paper:—

"The skin presents a generalised violet fluorescence, but, over the face and, to a less extent, over the rest of the body, dark non-fluorescent spots are seen, numerous in some individuals, almost absent in others. Freckled persons are usually thickly spotted, but, on the other hand, perfectly clear complexions may present a similar appearance. There are also to be seen, especially on the face, minute brightly fluorescent spots, having the appearance of stars."

Examination, in this way, of different skins under the ultra-violet beam revealed the fact that fair skins fluoresce more brightly than dark, and that the skins of dark races do not show a general fluorescence, but only over certain special regions. (The same applies to areas of artificially increased pigmentation, such areas being no longer as brightly fluorescent as before.) Thus, the same brightly fluorescent spots are to be seen on the face as in fair races, and the palms of the hands also present a fair degree of fluorescence.

Examination of the skin structures and derivatives shows that they may be divided into two groups—fluorescent and non-fluorescent.

* Read before the Section of Electro-Therapeutics of the Royal Society of Medicine, April 17th, 1925.

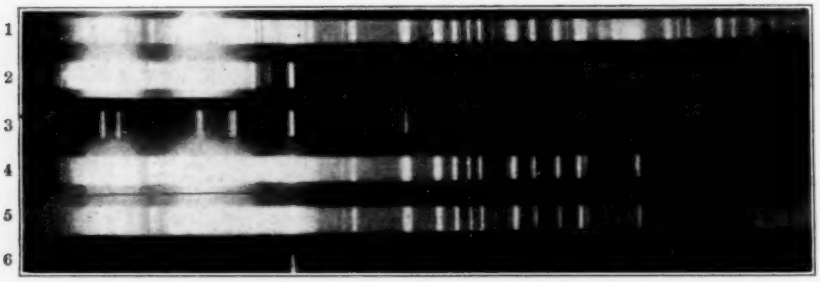
[1] Mottram, J. C., and Russ, S.: Proc. Roy. Soc. Med., 1920, vol. xiii. (Section of Electro-Therapeutics), pp. 143–145.

The *fluorescent structures* are the following: (1) The keratinised layer of the epidermis; (2) the nails (or non-pigmented claws in animals); (3) white hair (or white fur in animals); and (4) the cornea and lens (derived from skin structures). Of the skin secretions, the sebum, the cerumen, and the vernix caseosa of new-born infants. Milk is also fluorescent.

The *non-fluorescent structures* are: (1) The pigment and pigmented epidermis; (2) pigmented claws (in animals); and (3) pigmented hair (or fur in animals). Of the secretions, the sweat is non-fluorescent. The blood is also non-fluorescent.

Of the above-mentioned constituents of the skin the sebum is the most brilliantly fluorescent, and its presence in the sebaceous glands probably accounts for the brilliant spots seen in the ultra-violet beam. Melanin in a state of purity and all melanotic tissues examined are completely non-fluorescent. Both melanin and sebum prove, on spectrum analysis, to be powerfully absorbent of the ultra-violet rays. When a body is said to fluoresce in a beam of pure ultra-violet, it means that a certain amount of the incident invisible beam is being converted into rays of longer and visible wave-length, and that the intensity of ultra-violet is reduced by this amount at least.

FIG. 1.



Absorption spectra, mercury-vapour lamp: 1. Unscreened. 2. Vaseline screened. 3. Lanoline screened. 4. Lard screened. 5. Empty cell. 6. Wood's glass, plus vaseline screen.

Fluorescence a Protective Phenomenon.

Fluorescence must, then, from the ultra-violet point of view, be a protective phenomenon. The following experiments were performed to substantiate this.

From a number of substances examined, three were selected: lard, lanoline, and vaseline (yellow). Lard is non-fluorescent. Lanoline fluoresces very like human sebum. Vaseline fluoresces very brilliantly. Absorption spectra were taken through 0·1 mm. thickness of each of these substances (Fig. 1).

It will be seen from these spectra that lard does not absorb the rays at all. Lanoline absorbs wave-lengths shorter than 2900 Å.U. Vaseline absorbs the whole ultra-violet spectrum, with the exception of the small band of wave-lengths from 3800–3650 Å.U.

The skin of the forearm was then examined by ultra-violet and an area of even fluorescence was selected. This area was covered by a perforated shield by means of which a series of small areas could be exposed to the rays. Over one area lard was smeared; over a second, lanoline; and over a third, vaseline. Two similar untreated areas were used as controls.

The arm was then fixed in position, 15 cm. from the centre of a Cowper-Hewitt mercury-vapour lamp, consuming 203 watts, and all areas were exposed simultaneously for five minutes. In one hour from the end of exposure erythema had developed over all areas except that smeared with vaseline. The vaselined area showed no sign of reaction, though the other areas developed pigmentation within a week, most marked in the control areas and in that smeared with lard. The method of smearing the skin was in each case to apply a small trace of the substance to the area and rub it in gently, removing all excess by wiping dry with a clean towel.

Following this experiment, the protective power of vaseline was further investigated on similar lines. It was found that skin treated in this way by smearing with yellow vaseline is capable of standing three and a half times the length of exposure necessary to produce the same degree of erythema on normal skin. White vaseline is less protective than yellow, and shows less absorption spectrographically.

Skin Reactions in Relation to Intensity of Radiation.

The next series of experiments was undertaken with the object of seeing whether skin reactions run pari passu with physical measurements of the intensity.

The intensity of radiation from the mercury-vapour lamp is determined by the power consumption expressed in watts (obtained by the product of the current in amps. flowing through the lamp and the potential difference in volts between its terminals). When the power remains constant dosage depends on the time of exposure and the distance of the patient or object from the lamp.

Measurements of variation of the intensity of radiation with distance were made with a Furstenau (selenium) intensimeter, the power consumption of the lamp being kept constant at 396 watts. In this way the points on the full line curve in Fig. 2 were obtained. The thin dotted curves show the ordinary inverse and inverse square law curves, and it will be seen that, owing to the size of the lamp, the actual variation is not so rapid as from a point source.

Experiments were next made by exposing portions of normal human skin to the radiation at different distances ranging from 20 to 100 cm. The time of exposure for each distance was calculated from the data just mentioned, so that each corresponded to 1·5 E. (1 E = exposure at 30 cm. distance for two minutes with lamp consuming 310 watts and results in slight erythema in two hours and slight pigmentation in one week.)

The main result of these observations, given in detail in the table, was that, within the limits of error of observation, the skin reactions were identical until the intensity was reduced to about 8 per cent., provided the time of exposure was correspondingly prolonged. Beyond this the effect was slightly less marked. The exposures were, of course, made on the same individual.

Table Showing Results of Detailed Observations.

Intensity (per cent.).	Watts.	Time.	Distance in cms.	Dose.	Erythema.	Pigmentation.
100	451	1′	20	1·5 E	+ + +	+ + +
67	,,	1′ 30″	30	,,	,,	,,
43	,,	2′ 19″	40	,,	,,	,,
27·8	,,	3′ 36″	50	,,	,,	,,
18	,,	5′ 37″	60	,,	,,	,,
12·3	,,	8′ 11″	70	,,	,,	,,
10	,,	10′	80	,,	,,	,,
7·3	,,	13′ 45″	90	,,	+ +	+ +
6·7	,,	15′	100	,,	,,	,,

1 E results in + + erythema in 24 hours and + + pigmentation in one week.

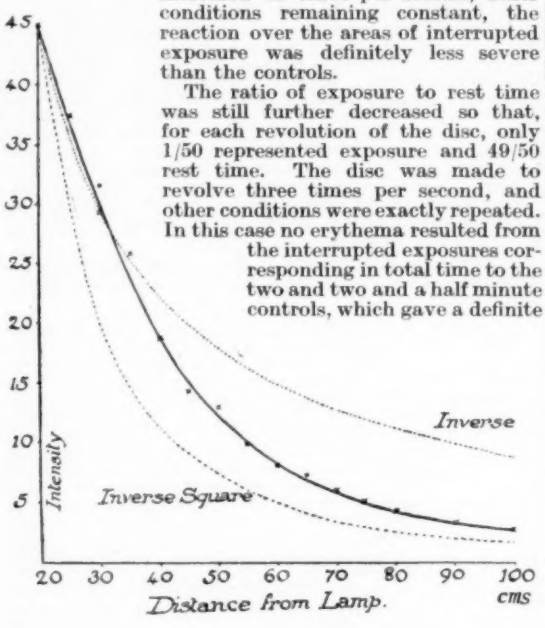
An attempt was made to obtain a direct skin reaction with rays of a particular wave-length by employing filters. A combination of Wood's glass and a vaseline cell showing spectroscopically absorption of all wave-lengths but a short band from 3800–3650 Å.U. was used (Fig. 1, No. 6). With this filter it was necessary to give 20 times the control exposure in order to get a faint transient erythema. It is possible that, in spite of the spectrographic evidence of the predominance of line 3650 Å.U., some shorter wave-length rays may have penetrated the screen and caused this effect.

Cumulative Effect of Repeated Small Doses.

The next thing investigated was the cumulative effect of repeated small doses. The method of investigation was to interpose a revolving disc between the source of radiation and the skin under examination. By variation of an aperture in the disc, different ratios of "exposure" to "rest" interval can be obtained and the frequency of exposure varied by the rate of revolution of the disc.

It was found that, with a ratio of exposure to rest interval of 1 to 1 a purely cumulative effect is produced. With 1/10 exposure to 9/10 rest, when the revolutions were increased to three per second, other conditions remaining constant, the reaction over the areas of interrupted exposure was definitely less severe than the controls.

FIG. 2.



The ratio of exposure to rest time was still further decreased so that, for each revolution of the disc, only 1/50 represented exposure and 49/50 rest time. The disc was made to revolve three times per second, and other conditions were exactly repeated. In this case no erythema resulted from the interrupted exposures corresponding in total time to the two and two and a half minute controls, which gave a definite erythema within a few hours. The interrupted exposure corresponding to the three-minute control showed an erythema corresponding to the two-minute control. A further interrupted exposure of total time equal to a control of three and a half minutes resulted in an erythema corresponding to that of the two and a half minute control.

Thus it appears that, for the shorter exposures (two and two and a half minutes total time) a ratio of "exposure" to "rest" time of 1 to 50 does not result in a cumulative effect as far as erythema reaction and subsequent pigmentation is concerned; but the tissues have had the same actual exposure to the rays as would result in a definite burn if given as a continuous exposure. A continuation of observations with still further reduction of the momentary exposures is being made, but the times of exposure are necessarily very prolonged. Perthes[1] has shown that, when two doses of U.V. radiation are given to the skin with a long time-interval between them, less reaction is produced than if the whole dose is given at one time.

The possibility of a constitutional effect of repeated exposure of rats to ultra-violet rays was investigated on the following lines:—

A group of 40 animals of similar age, size, weight, and colour was selected and divided into two subgroups, 20 for experiment (Group I.) and the remaining 20 for control examination (Group II.). The males and females were segregated in each instance. The hair over the backs of the Group I. animals was cut short so as to obviate the dissipation of ultra-violet rays by fluorescence or heat production in the hair. These animals were exposed to the full radiation from the mercury-vapour lamp for five minutes daily at 50 cm. distance for 30 days. The power consumption of the lamp was 180 watts, giving a daily dose of ½ E and a total dose of 7·5 E.

The animals in both Groups I. and II. received similar food and were housed under the same conditions as regards temperature, &c. Bi-weekly weight measurements show about 10 per cent. slower rate of growth in Group I. animals. At the end of one month the exposures were stopped, and one week later all the animals of both groups were inoculated with Jensen's rat sarcoma (J.R.S.) on the right side and with slow sarcoma on the left. Tumour measurements over a period of six weeks showed no appreciable difference between Groups I. and II. Thus it appears that, within the limits of the experiment, there was no constitutional effect calculated either to resist or favour tumour growth. A second series on similar lines gave the same result.

An attempt was made to find the lethal dose of ultra-violet rays for J.R.S. in vitro.

In view of the rapid absorption of the rays by the tissue, the sections of tumour must be very thin. To obtain a sufficiently thin uniform section to allow the rays to penetrate effectively, two razor blades were soldered to a metal handle so that the cutting edges were 0·5 mm. apart. With this double razor, sections were cut from actively growing tumours, care being taken to avoid any necrotic areas. The sections were laid flat, and, with due aseptic precautions, were treated as follows:—

Sections (*a*) were exposed to the full radiation from the mercury-vapour lamp.

Sections (*b*) were screened by 1·5 mm. of glass, to exclude the majority of the U.V. rays.

Sections (*c*) were set aside during the exposure and were used as controls.

A range of doses from 0·6 to 6 E was employed, the material being subsequently inoculated into batches of animals. When 6 E was reached all the (*a*) inoculations either failed to grow at all or grew small tumours for about ten days and then disappeared (0 per cent. growth). The (*b*) inoculations showed 33⅓ per cent. of growth, while the controls (*c*) gave 66⅔ per cent. growth. The lesser doses of U.V. rays allowed some growth in an appreciable number of cases, but 6 E was found to correspond to the lethal dose.

Conclusions.

From the foregoing experiments, it is, I think, possible to draw certain conclusions.

1. Since the skin surface is rendered visible by fluorescence, when only the invisible ultra-violet rays fall upon it, it is obvious that a greater or less amount of the incident rays is being dissipated at the skin surface as light and is consequently incapable of acting on any deeper structures.

2. Since fluorescence commences directly the skin is exposed to ultra-violet rays, whereas pigmentation only occurs as a result of considerable exposure, it is logical to suppose that, in fluorescence, we have a more immediate protection from excessive radiation, as far as ultra-violet is concerned, than in pigmentation.

[1] Perthes, G.: Münch. Med. Wochenschrift, Sept. 19th, 1924, p. 1301.

3. Since all the fluorescent substances examined, as well as the melanin which causes pigmentation, show marked absorption of ultra-violet rays, and since fluorescence and pigmentation always seem to vary inversely as each other, it might be interpreted that pigmentation marks the failure of fluorescence to protect the structures of the cutis vera from excessive radiation. This is substantiated by the experiments on artificially increased fluorescence, where no pigmentation followed exposure.

4. If pigmentation of the patient is aimed at as a standard of successful treatment, this is tantamount to producing deliberately in the patient a natural and efficient protection against the very source of treatment employed.

5. The pigmentation must be regarded as an indication that the penetration of the rays has not been prevented by fluorescence at the skin surface. If pigmentation could be avoided without hindering the penetration of the rays to the cutis vera it might prove more beneficial.

6. By employing the maximum dose which will on each application just fail to produce pigmentation, and, by separating the exposures by the minimum time-interval necessary to avoid the cumulative effect referred to, it should be possible to get equally good, if not better, therapeutic results in a shorter time.

I wish to thank Prof. Russ for his criticism and advice over many points in connexion with this paper, and Mr. D. B. Watters for assistance in measurements of intensity of radiation. My thanks are also due to Mr. S. J. Graham who kindly volunteered to submit to skin exposures in the majority of the experimental work.

SPIROCHÆTAL JAUNDICE IN GREAT BRITAIN.

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ALTHOUGH epidemics of spirochætal jaundice or Weil's disease seem to have been known from early times, especially during the Napoleonic and other wars, it was not until the discovery of the causative organism, *Leptospira icterohæmorrhagiæ*, by Inada and his fellow workers (1916) that the disease could be distinguished with certainty from allied conditions. During the great war the occurrence of considerable outbreaks attended by a mortality varying in different localities from 4 to 10 per cent. brought this disease into prominence,[1] and the works on the subject, such as those of Dawson, Hume, and Bedson (1917), and Martin and Pettit (1919), have considerably added to our knowledge. It seems to have been generally assumed that this was essentially a war disease and, as far as we are aware, its presence amongst the civil population in this country has only been proved on three occasions.

The first case was that described by Manson-Bahr, Wenyon, and Brown (1922) of a bargee who apparently became infected as the result of having swallowed large quantities of Thames water. The first appreciable epidemic in this country which was proved pathologically was that which occurred amongst the Lothian miners described by Buchanan (1924). Finally Lyon and Buchanan recorded a small outbreak in children in Edinburgh which, in their opinion, was the result of infection being introduced by a child from the Malay States.

[1] In Japan a mortality of 57 per cent. has been recorded, but this seems to be very exceptional.

In spite of the foregoing observations being the only proved cases recorded in this country, we strongly suspect that the disease is much more prevalent than is commonly supposed. Cases of slight jaundice, especially in children, preceded by febrile symptoms are well known. The common diagnosis is influenza followed by jaundice, but in view of the results of the case which we have examined, we suggest the probability of these being mild cases of spirochætal jaundice.

We have recently had the opportunity of examining two cases of this nature, in one of which we were able to demonstrate the presence of the very characteristic leptospira in the patient's urine. These cases are particularly interesting, inasmuch as they were undoubtedly linked up with a small outbreak in a school in the Midlands.

Clinical Records.

The clinical course of the disease in these two patients was as follows.

Case A, a boy of 12 years, returned from school for the holidays early in April. Fifteen days later he complained of headache, and for two days his temperature was raised, on the third day there was no fever, but on the fourth day the temperature again rose to 101° F.; this was accompanied by persistent vomiting, marked distaste for any sweetened articles of diet, distinct smell of acetone in the breath, and the urine contained considerable amounts of acetone as evidenced by Rothera's test. The vomiting persisted for four days, then during the second week of the disease jaundice was well marked; this was accompanied by pain over the region of the right kidney, and on examination of the urine a heavy cloud of albumin and red blood cells were present; the nature of the disease was not suspected and no examination of the urine was made for the presence of leptospira. The treatment was entirely symptomatic, the acidosis being combated by rectal injections of glucose and bicarbonate of soda. During the second week epistaxis was a marked symptom. The symptoms gradually cleared up, and the patient made an uninterrupted but somewhat tardy recovery and returned to school.

It was then ascertained that several other cases of jaundice, 14 in all, had occurred amongst the boys from the school.

Case B, sister of the above, aged 8, who had been in close contact with the previous case, showed febrile symptoms exactly 30 days after Case A first became ill. There was three days' high fever during which marked photophobia and conjunctival congestion was present; jaundice appeared during the second week of the disease. From the eighth to the seventeenth day careful daily examination was made for the presence of leptospira in the urine. They were only once found—namely, on the ninth day; but on this occasion they were present in very considerable numbers, there being as many as three in a field of the centrifuged deposit.

The other significant symptoms in this case were as follows. Epistaxis occurred at intervals during the second week. There was, however, no vomiting and no hæmaturia, and although acetone was present from the third to the tenth day in large amounts in the urine, the albuminuria was very slight, only amounting to a distinct trace, and even that was not always present.

Animal Experiments.

Although certain of the guinea-pigs inoculated with the deposit from the centrifuged urine showed febrile reactions indistinguishable from those occurring in typical cases of this infection, we have not yet been able to recover the leptospira from the inoculated guinea-pigs.

Three guinea-pigs were inoculated with centrifuged urine on the eighth day of disease; one of these, which showed marked febrile reaction, was killed on the sixth day after the inoculation. Portions of the liver and kidney were macerated in normal saline solution, and two more guinea-pigs were inoculated with this suspension. Cultures from the heart blood, and from the saline suspension, were taken into Wenyon-Noguchi medium, but no growth of leptospira occurred. Two more guinea-pigs were inoculated with centrifuged urine on the eleventh day of disease; one of these showed a febrile reaction indistinguishable from a typical case of spirochætal jaundice in this animal. This was killed on the seventh day, and the kidney-liver suspension inoculated into two more animals.

Unfortunately no animals were inoculated on the ninth day of disease. Of the three which had been inoculated on the

previous day, one was showing a marked febrile reaction, and it was not then considered that the excretion of leptospira would prove to be such a transitory phenomenon in this case.

Source of the Infection.

It was found that four boys were admitted to the school sanatorium during the last week in March with symptoms very similar to those already described; also during the Easter holidays ten more boys suffered from a slight febrile condition, accompanied with jaundice in varying intensity and duration. Further, in addition to Case B, the sister of one of the infected boys also developed fever and jaundice. We therefore paid a visit to the school with the object of trying to discover some focus of infection. A similar outbreak in a school near Magdeburg (Körner, 1925) having been traced to infection through bathing, this possibility naturally occurred to us, but it was found that the school swimming tank had not been used by any of the boys during the last term.

Samples of water were taken from the storage tanks and also from the main water-supply, but in no case were leptospira found by direct examination of the centrifuged deposit. The cultures of the water from two storage tanks, however, revealed the presence of typical leptospira, but as these organisms have been found by one of us (E. H.) in water from many different sources, including London tap-water, its presence in this connexion does not necessarily throw any further light on the origin of this epidemic. The possibility of rats serving as a source of infection seems to be eliminated, as there was no record of any ever having been seen in the school buildings.

It is interesting to note that the four boys who first became ill during the term all occupied separate dormitories, and not one of the four was in the same form as the others. It would therefore appear that food or water was the most probable source of infection. As regards the chance of infection by food, there was a history of ambulatory indisposition in the case of one of the kitchen staff shortly before the boys became ill, but as 2½ months had elapsed before our visit, we were unable to obtain any more definite information on the nature of the illness.

Discussion of Results.

There can be no doubt that the cases which we have observed formed part of the general outbreak which originated at the school. We are led to this conclusion from the study of the history and clinical aspect. The incubation period in Case A was clearly a fortnight or more, a period which is considerably in excess of that usually observed in ordinary outbreaks of the disease. A similarly prolonged incubation period was also noticed in the case of some of the other boys, and this indicates that in mild epidemics, to which children seem to be specially liable, the incubation period may be as much as a fortnight or longer.

The clinical symptoms of both the cases observed by us closely resemble those described by Lyon (1925) in the Edinburgh epidemic last year. Acetonuria, epistaxis, and hæmaturia accompanied the jaundice and, in Case B, the conjunctival congestion mentioned by Stokes and Ryle (1916) and Martin and Pettit (1919) as being a feature of this disease.

The discovery of typical *Leptospira icterohæmorrhagiæ* in the urine of Case B on the ninth day of the disease leaves no doubt regarding the diagnosis. We are well aware that spirochætes of the *refringens* type have been found in the urine of normal individuals, but these bear no resemblance whatever to leptospira; with regard to *Spirochæta lorient* described by Pettit (1917) and Cristau (1917), which is apparently the cause of a very contagious spirochætosis, the high incidence of jaundice in the epidemic which we have described seems to distinguish it from the epidemic at Lorient.

From the figures given by Pettit (1917) it is impossible to distinguish these two species on morphological grounds. The fact that we have been unable up to the present to recover the organism from inoculated guinea-pigs does not in any way negative the diagnosis, for it is well known that when one is dealing with a comparatively non-virulent strain the chance of animal infection is remote. In the Edinburgh outbreak Buchanan (1925) only obtained one definitely positive result out of 44 animal experiments.

The main object of this paper is to emphasise the necessity of repeated examination of the urine for leptospira in all cases of undiagnosed fever followed by jaundice. This, however, can only be undertaken in a well-equipped laboratory, as a high-speed centrifuge and dark-ground illumination are essential. Finally, attention should be drawn to the infectious nature of the disease, and we suggest the advisability of adding it to the list of notifiable diseases, as from what we have heard recently there is some evidence that a mild form of this disease is widespread in this country.

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THE CHAULMOOGRA TREATMENT OF LEPROSY

AT THE HOSPITAL FOR LEPERS, DICHPALLI, HYDERABAD STATE.

BY ISABEL KERR, M.B., CH.B. ABERD.

FOR the past four and a half years we have been giving the more recent preparations of chaulmoogra and hydnocarpus oil at this hospital, a mission institution which, in its erection and maintenance, owes very much to the enlightened generous policy of H.E.H. the Nizam and his Government.

Before the present treatment was adopted our inmates were mostly very advanced cases—men and women who, because of the deformity caused by the disease, were unwelcome in their homes. We could give them very little beyond general care, food, and clothing. They were unhappy because of their disease and we because of our ignorance of it. Such an institution achieves little or nothing in the prevention of the spread of leprosy, since most of the cases are past the infectious stages of the disease.

Methods of Treatment.

Early in 1921 we began the use of the ethyl ester of the fatty acids of hydnocarpus wightiana oil with creosote, camphor, and olive oil (E.C.C.O.), given under the skin or into the muscles. Of all the cases treated charts showing the condition of the patients were prepared—anæsthesia, nodules, discoloration, bacterial examination being recorded previous to treatment. Progress also was noted on successive similar charts. These were submitted to Dr. E. Muir, leprosy research worker of the Indian Government, Calcutta, with whom we have always worked in unison.

With the above preparation recent patches improved and nodules disappeared, but it was the general effect of this mixture which was most marked. It contained only a small percentage of ethyl ester. The exact composition was: Ester 1 part, camphor 1 part, creosote 1 part, olive oil 2½ parts, and the maximum dose, 5 c.cm. Previous to its administration our inmates were dull and apathetic, few of them slept, few had any appetite, and all were lethargic. The change was very marked; sleep and appetite returned and there was a general desire to move about and share in the normal activities of life. Both they and

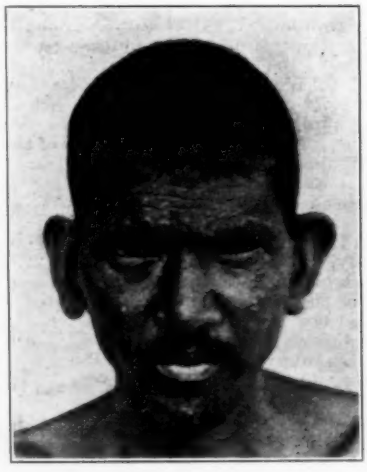
we felt we had come to the end of the dark tunnel in which we had been living, and had begun to see light.

In order to check how much of the improvement was due to the creosote and olive oil we carried out a control treatment at the same time with a 2 per cent. mixture of creosote and olive oil. With this, sensation returned in non-sensitive areas of not too long-standing, but positive lesions did not show improvement as they did with E.C.C.O.

FIG. 1.

Before treatment.

FIG. 2.



After treatment.

From E.C.C.O. we passed to more intensive treatment, giving the pure ester combined with creosote and iodine intramuscularly, and with iodine alone intravenously. In this way we could give up to 16 c.cm. a week. By this time, too, we had begun to get a better class of patients; the Railway Medical Service of the State and our mission hospitals throughout the district combed out from their employees and their schools infected people. As many of these were early cases, we had just the sort of patient who responded to treatment in a comparatively short time. The intravenous method, though more speedy in its result, was not popular with a few of the patients, since it caused a good deal of nocturnal coughing. It did so also during injection if not given very, very slowly. In some of the acute skin ("nodular") cases it was difficult to give in small enough dose to avoid aggravating the disease, but the skin cases who could take the large doses, either intravenously or intramuscularly or both, did very well. The lepra bacilli, lying as they do as emboli in the fine capillaries, can be reached through the blood-stream. In nerve cases the organisms are more difficult to reach. With them results were not so marked. However, of the reports and charts we submitted to the Leprosy Research Department, Calcutta, 66 per cent. of our cases showed "very much improvement," and of these 12 per cent. had become symptom-free.

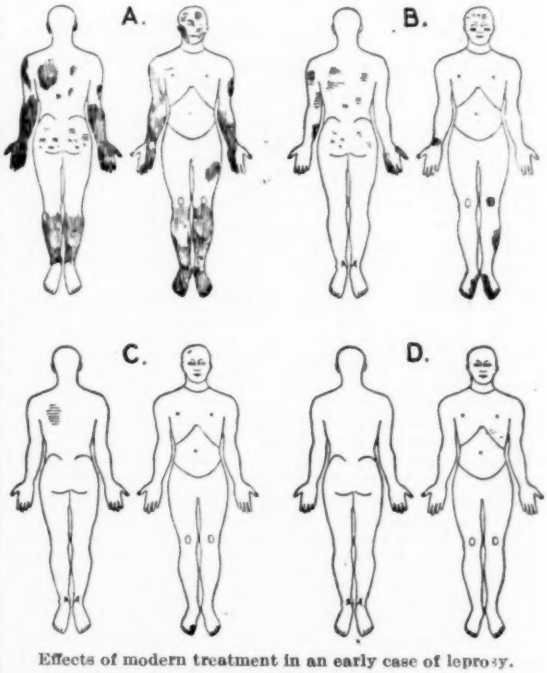
I may say at this point we accelerated the effect of the ester by the use of Kedrowsky vaccine. Dr. Muir kindly supplied us with slants of the "lepra bacilli" from which we had vaccines prepared. This started cases reacting (i.e., getting evening temperature) after they had seemed callous to the ester.

Occasionally one finds a case which cannot take this treatment. One we had was a young man of 25 who had suffered from constipation from his childhood, had hæmorrhoids, and a liver which refused to function. Under such conditions it was impossible to coax even the beginnings of immunity without causing a violent reaction which was difficult to stop. We like to keep our patients, when we can, just on the point of reacting, even although we find that a reaction of 48 hours can bring about a great deal of improvement. Invariably we find that minimum doses of the E.C.C.O. 0·25 c.cm. brings down the temperature. For this it is a valuable asset as well as for infiltrating old bone lesions which cause perforating ulcers.

Of course to achieve success we have been careful to get our cases uncomplicated. Concurrent disease, such as intestinal worms, malaria, syphilis, chronic gastric trouble, hinder the patient acquiring immunity. A quantity of medicine is wasted and prolonged inconvenience to the patient caused if these are not dealt with.

The more recent method of infiltrating the skin with the ester combined with creosote or thymol has given the quickest results with us at Dichpalli and, I believe, elsewhere. No inconvenience beyond a burning sensation for a few minutes at the points of injection is felt, and thus the patients are very keen about it. We infiltrate the lesions with the drug and paint over the surface with trichloracetic acid. Early cases show improvement within a few weeks; older lesions naturally need longer time. Very old nerve lesions, where the nerve-endings are dead, cannot improve. The scars may disfigure the patient, but, being non-infective, they can no more

FIG. 3.



Effects of modern treatment in an early case of leprosy.

A, on admission (1/6/21). Showing erythematous patches of imperfect sensation; lepra bacilli in nasal discharge. B (1/2/22). Showing discoloration of old patches and some small insensitive areas. C (30/3/22). Discoloured patch on back and small insensitive patch on toe. Nose shows broken-up bacilli. D (16/8/22). Patient symptom-free. Wassermann test negative.

convey leprosy than, as Dr. Muir has put it, can small-pox pitting convey small-pox.

When a lesion is infiltrated we find that not only is there improvement locally, but also in the distant lesions. The irritation caused by the drug breaks up the bacilli which throw out their toxins. Those again make antitoxins which break down bacilli elsewhere. By infiltration we can give whatever amount of the ester a patient can take. As much as 20 c.cm. can be given a week and even more. We generally give part of a large injection into a muscle.

This short article would be incomplete without reference to a control treatment we carried out for two years with the esters of linseed and olive oil. This was done at the suggestion of the Calcutta leprologists. With a few cases—mostly nerve leprosy—improvement followed, but not so marked as with the chaulmoogra series. All these oils are unsaturated, but linseed and olive oils do not belong to the carbon ring series as do the latter. As leprologists tell us, we need both qualities in then treatment of leprosy, and our control treatment bears this out.

Results.

Out of 180 patients treated with hydnocarpus ester during 1923 and 1924 the following statistics were drawn up: 17 per cent. symptom-free; 45 per cent. very much improved, most of them likely to become symptom-free; 35 per cent. improved; 3 per cent. worse or dead. Of infective cases 63 per cent. have become non-infective.

In all skin cases the effects of treatment are gauged by microscopic examination of skin and nose. It is important with such patients that the treatment should be as intensive as possible. If it is slow the nerves may become affected, and the treatment would be unnecessarily prolonged.

On admission a number of our patients suffer from acute toxæmic symptoms—temperature and pain along the nerve trunks. This is especially marked if the disease is not advanced. Even with the minimal doses, which one has to give to avoid aggravating the temperature, the neuralgic symptoms disappear almost as if a dose of morphia had been given. When the progress of the disease has been stayed the patient's immunity increases and we are able to give larger amounts of the drug. The results then depend on patience, care, and time. Two complications for which we have to be on the look-out are tuberculosis and nephritis. The symptoms of tubercle are often so completely masked by those of leprosy that the first announcement of its presence may be acute tuberculosis of the intestinal or meningeal type.

The series of diagrams, A to D, show what may be expected in an early case of leprosy which had just passed into the infective stage. There was obstruction of the right nostril, occasional bleeding, and acid-fast bacilli in smear. The symptoms appeared concurrently with an attack of syphilis. The longitudinal shading represents loss of sensation; horizontal shading discoloration. The patient was under intensive treatment for 15 months. Then he returned to normal life and work, coming to us for a time for weekly injections. He has kept perfect health for three years.

LECTURES ON CHILD WELFARE.—The National Association for the Prevention of Infant Mortality and for the Welfare of Infancy has arranged a special course of lectures for health visitors, voluntary workers, teachers, nurses, &c., to be held at University College, Nottingham, from Sept. 21st to 25th. The syllabus includes such lectures as the Nervous Child, by Dr. Eric Pritchard; the Care of the Adolescent Girl and the Home Care of the Mentally Deficient, by Dr. Letitia Fairfield; the Prevention of Difficulty in Labour, by Dr. J. S. Fairbairn; Ductless Glands and Vitamins, by Dr. J. Stanley White; and Warnings of the Abnormal in Labour, by Lady Barrett. Visits to clinics, sanatoriums, and dwellings will also be included. Full particulars may be obtained from the Honorary Secretary, 117, Piccadilly, W. 1. Early application is advisable.

TWO CASES OF CYSTINURIA IN CHILDREN,

WITH RENAL AND VESICAL CYSTIN CALCULI RESPECTIVELY.

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CYSTINURIA is a rare family and hereditary abnormality in the metabolism of proteins,[1] in which the sulphur-containing amino-acid, cystin, a normal product of the hydrolysis of proteins, is excreted in the urine to the extent of half a gramme in the 24 hours. It is found in the child, and persists throughout life.[2] Cystin may give rise to urinary deposits in acid urine in the form of colourless hexagonal plates and may form calculi. The deposit alone, however, will not form calculi, but is only a factor in their formation.[3] Apart from the liability to form calculi, the excretion of cystin has apparently no ill-effect; thus Abderhalden[4] says: "The metabolism of a cystinuria patient is always normal, and urinary stones are frequently found in the disease." Macalpine,[5] who removed six cystin calculi from the kidney of a boy aged 8 years, noted that the urine of cystinurics on decomposition had a foul odour, possibly due to the sulphuretted hydrogen produced during the decomposition of the cystin, which contains practically all the sulphur of proteins.

The calculi are of a yellow appearance, and assume a greenish waxy appearance after removal. They are often multiple and bilateral, and may be found either in the kidneys or bladder, and are prone to occur in several members of the same family. They usually cast a fairly dense shadow with the X rays. Case 1, here reported, gave excellent shadows. Graves,[6] however, reported a case in an obese woman of 26 with unmistakable clinical signs of calculus in the kidney, which failed to reveal a shadow on two occasions. It was finally shown by a pyelogram. He points out that cystin, being an amino-solid, would not be expected to give a shadow unless mixed with inorganic substances. Thomson-Walker[3] says that "cystin and xanthin calculi cast a shadow only slightly less dense" than oxalate of lime calculi. Graves, however, admits that the general opinion of most writers is that they readily give a shadow, and quotes Müller,[7] who reported a case of a man, aged 21, who persistently formed cystin calculi which gave shadows with the X rays. He also refers to Morris's[8] paper on the X Ray Shadows of Cystic and Xanthic Oxide Calculi. Morris said that many cystin calculi contain phosphate of lime and traces of magnesium and ammonium phosphate, but what was more to the point, cystin contains 25·53 or 25·81 per cent. of sulphur, and therefore it was improbable that they could fail to cast a very deep shadow. He reports a case in a patient, and refers to specimens in the Museum of the Royal College of Surgeons of England.

Frequency of Occurrence.

As regards the frequency of occurrence of cystin calculi, Tennant,[9] in his paper on cystin calculi, says that until 1882 only 50 cases had been reported. He refers to Kretschner's[10] comprehensive study on cystinuria and cystin calculi in 1916. He (the latter) found 107 cases of stones, including two of his own in twin boys aged 9 years. Vesical calculi were present in both the twins and were diagnosed before operation. Tennant also refers to Watson and Cunningham,[11] who reported one case in 32 cases of cystinuria, to Morris[12] two in 77, and to Sir Henry Thompson three in 114. Calculi, therefore, occur in about 2–3 per cent. of cystinurics. Although rarely, calculi may occur in old age. Mörner[13] reported a vesical cystin stone successfully removed from a man aged 69.

As regards the families of the two cases here recorded, a baby sister of Case 1 is cystinuric, but

other members of the family, including both parents, are free from this anomaly. A brother of Case 2 passes urine containing cystin, but the urine of the mother (father deceased) contains none. It may be noted [14] that the urine must be acid for the deposition of the crystals, and if not acid must be rendered so by the addition of a few drops of acetic acid.

Cystinuria is of interest to the surgeon on account of the complex surgical problem that is presented so frequently by the multiplicity of the calculi and by the persistence of their re-formation after removal. These two factors are responsible for serious damage to the renal function, and establish thereby a grave operative risk. Thus Tennant,[9] in his paper referred to above, reported a case of multiple cystin calculi in a woman aged 21, on whom he performed three major operations, removing 15 large stones of an aggregate weight of 73 g., and involving both kidneys and one ureter. There were two in the right kidney, one in the left, and a series of 12 in the right ureter. The function of the right kidney was low, as shown by the phenol-sulphonephthalein test. She recovered, but continued to deposit cystin crystals in the urine. Müller,[7] in his paper already quoted, gives the history of a young man of 21, who formed cystin calculi with ungovernable persistence.

CASE 1.

Case 1 is an illustration of the surgical problem with which the surgeon may be faced. This case was under the care of Mr. George E. Waugh at the Hospital for Sick Children, Great Ormond-street, to whom I am indebted for permission to publish it, and whom I have to thank for many suggestions and much helpful criticism in the preparation of this paper.

CASE 1.—K. H., girl, aged $9^{9}/_{12}$ years, was admitted to hospital on March 20th, 1922, with a history of pain in the right side for about a year, and occasional hæmaturia after running about.

Past and Family Histories.—Nothing of note, but subsequently in February, 1924, a baby sister was found to be passing cystin.

Condition on Admission.—She was a pale but well-nourished child. Right kidney easily palpable. No œdema of the extremities or puffiness under the eyes. Urine: Pale, turbid, acid; sp. gr. 1012; albumin, slight cloud; no sugar. Blood cells, occasional pus cells, and granular casts present. Blood pressure: 123 mm. Hg. Wassermann reaction: negative. No retinitis. Skiagram: One large calculus and several smaller ones in the pelvis of each kidney (Fig. 1). Urea-concentration test (March 24th, 1922): Maximum urea concentration of 1·7 per cent. Cystoscopy (March 31st): Nothing abnormal. Ureters catheterised. 2 P.M., 4 c.cm. of 4 per cent. indigo-carmine given intramuscularly. 3.40 P.M., coloured urine from right kidney. 6 P.M., tinge of colour from left kidney. Segregated urines: Urine from right kidney, urea present in considerable quantity; urine from left kidney, urea present in minute quantity. Conclusion: Right kidney, fair efficiency, 60 per cent. of normal; left kidney, poor efficiency, 10 per cent. of normal.

FIG. 1.

Case 1.—Skiagram, March, 1922. Calculi before operation

FIG. 2.

Case 1.—Skiagram, July, 1922. Calculi remaining after both operations, and before administration of sod. bicarbonate. (Cf. Fig. 3.)

First operation (April 7th): Left kidney (more damaged one). Usual lumbar incision. One large branched calculus, about five or six smaller ones, and many minute calculi were removed from the pelvis of the kidney, which was considerably dilated, the amount of kidney substance being considerably reduced. Difficulty was experienced in removing the smaller stones from the dilated calyces. The pelvis contained purulent urine and was irrigated with 2 per cent. chloramine in saline and closed with drainage. During the operation the parietal wound was protected with gauze wrung out in 1 in 40 carbolic acid to avoid infection.

Pathological report on calculi: Cystin calculi; the large branched one weighed 15·50 g. Urine: Cystin crystals found in the deposit.

Urea-concentration test (April 24th):—

	Patient.	Control.
24-hours specimen ..	0·6 per cent. urea	1·8 per cent. urea.
Grammes vi. urea given:—		
6 A.M...	1·7 „ „ „	2·9 „ „ „
7 A.M...	1·4 „ „ „	3·1 „ „ „
8 A.M...	1·3 „ „ „	3·2 „ „ „

Skiagram (May 18th): Several small stones still remain in the pelvis of the left kidney.

Second operation (May 19th): Right kidney. A similar operation was performed, and the same condition found as in the left kidney; but the kidney was not so dilated. Large branched calculus, weighed 6·40 g. After both operations there was considerable hæmaturia for some days, which, however, cleared up without trouble, and the wounds healed soundly after removal of the drainage-tubes, without becoming infected. July 5th, numerous minute calculi passed during the last month. Skiagram: Several small calculi remain in the pelves of both kidneys. Ureters and bladder free. (Fig. 2.) Urea-concentration test: 24 hours specimen, 1·1 per cent. urea; 4 A.M., 1·4 per cent. urea; 5 A.M., 1·8 per cent. urea; 6 A.M., 1·8 per cent. urea. Oct. 9th, passing small stones at intervals, sometimes hæmaturia. Skiagram: No change since July. Urea-concentration test: Maximum urea-concentration, 1·8 per cent. Diet: Fish; sod. bicarb., gr. 120 daily

February, 1923: Occasional severe headache, occasionally passes a small stone. Urea-concentration test: 24 hours specimen, 1·75 per cent. urea; 6 A.M., 1·45 per cent. urea; 7 A.M., 1·70 per cent. urea; 8 A.M., 1·80 per cent. urea.

February, 1924: General condition improved, and she is growing. She attends school, but still has severe headaches which keep her away on occasions. Has not passed any stones for fully six months.

Urea-concentration test:—

	Urea per cent.	Urine.
Twenty-four hours urine	1·31	508 c.cm.
First hour	1·50	90 ,,
Second hour	1·40	150 ,,
Third hour	1·58	90 ,,

Urine contains cystin crystals, no casts; cultures sterile. Skiagram: Now remaining, one large and one small calculus in the left kidney. (Fig. 3.)

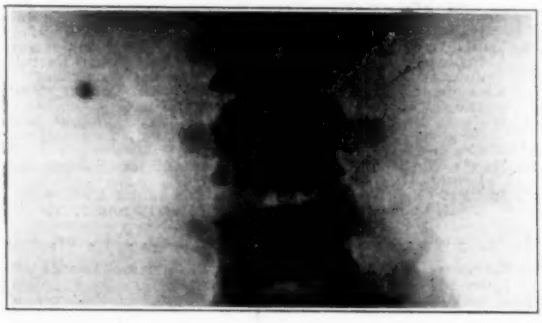
December, 1924: Condition excellent, attends school regularly. Cystin crystals still present, but as precipitation. Diet restricted still and 120 gr. sod. bicarb. daily.

Comment.

The urea-concentration test, the indigo-carmine test, and the analysis of the segregated urines, showed a low renal efficiency and therefore a bad operative risk. It was, however, essential to attempt removal of the stones, the alternative being inevitable death within a comparatively short period.

The surgical problem presented was the question as to which kidney to operate on first. To operate upon the more efficient kidney first with a view to arresting further damage to the renal structure as quickly as possible, would appear to have been the operation of choice. But the fear that suppression of urine might follow the first operation was responsible for the decision to deal with the less efficient kidney first, thus leaving the more actively functioning kidney to bear the brunt of a possible post-operative complication. The subsequent after-course of the patient threw no light upon the wisdom of this decision. She did remarkably well after both operations; at no time did her condition give rise to anxiety, neither were there any signs of impending uræmia. No doubt this favourable result was largely due to careful nursing and dieting.

FIG. 3.



Case 1.—Skiagram, February, 1924, showing effect of administration of sod. bicarbonate. (Cf. Fig. 2.)

There was a measure of doubt as to whether the stones in the left kidney shown by the skiagram taken in May, 1922, just before the second operation, and in both kidneys in July and October, 1922, had been left behind at the operations, or had re-formed in the meantime. The skiagram in May was taken about six weeks after the first operation, and that in July about two months after the second, which seems a very short time for the calculi to have re-formed. But she was not put upon large doses of sod. bicarbonate daily until October, 1922, which is said to increase the solubility of cystin. It seems hard to confess that any stones had been left behind after the very thorough manner in which the calyces had been explored and irrigated. The skiagram taken in February, 1924, shows that she has been passing these stones, so that the sod. bicarbonate appears to have been of considerable value. The urine, however, still contains cystin crystals.

Prognosis.

Although the patient is lucky to have recovered from two severe major operations on such damaged kidneys (Kürster gives the mortality for double calculi as 35 per cent.), the ultimate prognosis cannot be very favourable. The urea-concentration test in February, 1923, shows very little improvement indeed in renal efficiency, while that of February, 1924, is distinctly disappointing; considering she has passed the majority of the stones remaining in the kidneys, one had hoped for an improvement in renal efficiency, more particularly as she has improved in general health, and is growing.

Apart from her renal efficiency, her present condition is encouraging, but the restricted diet and sod. bicarbonate must be continued. Should she form any calculi of such a size as to call for removal, operations on such damaged kidneys would be attended with very grave risks indeed.

The mother gives the following history of a sister of this patient:—

M. H., girl aged $1^{8}/_{12}$ years. Since July, 1923, has had attacks of abdominal pain accompanied by profuse sweats. She doubles herself up and presses the hands over the pubes. Each pain lasts from three to four minutes, and may occur several times daily. The relation to micturition has not been noted, and no blood in the urine has been seen. While under observation in the ward for a week in February, 1924, the attacks of pain were not noticed, but she appeared to have some retention on occasions. The urine was acid, contained an abundance of cystin crystals, and *Staphylococcus albus* was grown from a catheter specimen. A skiagram of the urinary tract was negative.

CASE 2.

Case 2 is that of a boy who was under the care of Mr. O. L. Addison at the Hospital for Sick Children, to whom I am indebted for permission to publish it.

C. H., boy aged $2^{7}/_{12}$ years, was admitted to the Hospital for Sick Children on Sept. 15th, 1922.

History.—Twenty-one months ago he started screaming when passing water; attacks of pain came on every two weeks at first, more frequently lately. He was always soaking his napkin. He passed a very little bright blood on two occasions in March or April, 1922, and for six weeks during March and April he had a urethral discharge. He was circumcised when six weeks old.

Family History.—Brother, E. H., aged 9, has had an operation for stone in the bladder elsewhere, which was not chemically examined. Father died from heart failure. Skiagram: Large vesical calculus. Cystoscopy (Sept. 21st, 1922): Stone seen, also two ulcers. Œdematous and inflamed mucous membrane. Bladder contracted. Suprapubic lithotomy: Stone size of a pigeon's egg removed. Drainage-tube inserted. Pathologist's report: Cystin calculus weighing 8 g. The drainage-tube was removed on Sept. 28th, and the boy discharged with the wound healed on Oct. 17th.

Readmitted on Oct. 28th, 1923, for "inability to pass water." Since discharged last year has been quite well, but recently has been wetting himself more than previously, having frequency at least every hour by day. Stream has always been good. Oct. 27th, 1923: Only a drop or two of urine would come away. A doctor passed a catheter and sent him to hospital. While being carried to hospital he had an attack of screaming. Mother examined him and found that two small stones had been passed. In the ward he appeared to be quite comfortable. Bladder was not distended. The stones were the size of a split pea, hard, and brittle. Skiagram (Oct. 3rd, 1923): Bladder and kidneys—no abnormality, ? doubtful shadows left kidney region. Passing urine freely. Urine: culture from deposit: first day, streptococci isolated; second day, few colonies. *B. proteus* grown. Report on calculi: Calcium oxalate and triple phosphate, trace of alkaline earths. No cystin. Cystoscopy (Nov. 1st): Slight cystitis. Area of left ureteric orifice inflamed. No stones seen. Skiagram (Nov. 5th): Very small shadows in left kidney region. January, 1924: Still has frequency, wets himself often. Urine deposit: Chiefly oxalate crystals, few cystin crystals. February: Put on sod. bicarb., gr. 45 daily. March: Has passed two more small calculi which the mother did not keep. Skiagram (March 22nd): Fairly large calculus in left kidney. December: Still wets himself. Passed some "sand" in

September last. Calculus little larger but still of a size possible of being passed. Still on sod. bicarb., gr. 45 daily.

Comment.

This case is remarkable in that the boy forms oxalate calculi as well as cystin, and that the urinary deposit contains chiefly oxalate crystals, only a few cystin crystals being found. In the literature I have searched, I have not found a case in which other calculi as well as cystin calculi have been formed.

Prognosis.

Unless this patient succeeds in passing the calculi now in his left kidney, it is evident that sooner or later they will have to be removed. Being a boy, he is less likely to pass them as the girl has done. Moreover, his bladder is infected, and, with the calculi, progressive loss of renal efficiency will ensue. That he forms two different sorts of calculi also complicates matters. But he has come under treatment before serious damage to his renal function has occurred, and so his outlook in life is considerably better than the girl's. E., the brother of this patient, who had a vesical calculus removed elsewhere four years ago, has no symptoms now, and a skiagram of his urinary tract is negative. His urine, however, contains cystin crystals. I think it, therefore, justifiable to assume that his calculus was of this composition. He has now been placed on sod. bicarbonate gr. 45 daily, with a view to preventing, if possible, any re-formation of cystin calculi.

SUMMARY.

Cystinuria, when complicated by the formation of calculi, is undoubtedly a very serious disease, both on account of the multiplicity of the stones and the serious damage to renal function caused thereby, and also on account of the persistence with which they continue to be formed. Their formation can evidently be controlled to a certain extent by the administration of large doses of sodium bicarbonate; but it is said to be largely independent of diet. Since only 2 to 3 per cent. of cystinurics form calculi, cystinuria cannot be looked upon as a very serious potential danger to life, and apparently 97–98 per cent. of these individuals go through life without suffering any disability at all from their abnormality in protein metabolism. It is possible, on the other hand, that, with the increase of biochemical investigations carried on in this branch of medicine, more unsuspected cases of cystin calculi may be discovered, since calculi have not always been subjected to analysis and the yellow appearance of cystin calculi at the time of removal may suggest a uric acid or urate composition. It is not until after exposure for some time to the air that they assume their characteristic greenish waxy appearance.

Since writing this paper Edwards [15] has published an interesting case of cystinuria with calculous formation, in whom the passage of cystin crystals was intermittent. Repeated specimens of urine gave no deposit of crystals after acidifying with acetic acid and acetone, and the chemical reactions of cystin were absent. The specimen containing crystals was darker and more oily than those without the crystals and yielded a heavy deposit. The familial nature of the disorder is also strongly brought out in his case, and a study of the family further emphasises the serious damage that can be done to the kidneys as well as the multiplicity of the stones that may be formed—over 200 having been found in the enormously enlarged kidney removed from one sister.

As regards the density of the X ray shadows of cystin calculi being dependent on the sulphur they contain, Winsbury White [16] states in a recent paper that cystin and xanthin calculi give poor shadows when in the pure state, but of slightly more opacity than those of urates, uric acid, and triple phosphate owing to the sulphur they contain.

Edwards also makes some suggestions as to treatment. He says that choleic acid may be given on the hypothesis that endogenous cystin is excreted because of the lack of choleic acid with which it should normally conjugate to become the taurin of the bile-salts. Intestinal and urinary antiseptics, he says, should be given to allay the pelvic infection which furnishes the irreversible colloid that glues the crystals into calculi. Vaccines prepared from fæcal strains for this purpose he did not find of much benefit. He also refers to Klemperer and Jacoby, who state that the administration of 6–10 g. of sodium bicarbonate causes the complete cessation of cystinuria. Where stones have already been formed this is of no value, but in the two cases here described the large doses given seem to have been of distinct value, in any case in controlling the formation of calculi.

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New Inventions.

AN IMPROVED REFILL NEEDLE FOR ARTIFICIAL PNEUMOTHORAX.

THERE are certain disadvantages in the refill needles commonly used in cases of artificial pneumothorax. The Lillingston needle is difficult to push through the skin. The Saugman needle is very apt to

punch out a piece of skin. This can easily be cleared by squeezing the tube, or inserting the stilette through a stuffing box, but it is a nuisance, and theoretically it is wrong to push the piece of punched-out skin into the pleural space. I have, therefore, asked Messrs. Allen and Hanburys to make for me the needle herewith illustrated. It works extremely well. The point is an ordinary sharp-cutting trocar point; the outlet hole is situated laterally. It can only be used, of course, when there is an appreciable pneumothorax.

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BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT BATH.

SECTION OF SURGERY.

WEDNESDAY, JULY 22ND.

CARCINOMA OF THE STOMACH.

IN opening a discussion on this subject Sir William I. de Courcy Wheeler reminded the meeting that 10,000 people died annually in the British Isles from this condition. He proceeded with a destructive criticism of the method of diagnosis by analysis of the gastric contents which, in his opinion, did not lead to any definite goal, nor did he consider the fractional test-meal productive of encouraging results. The greatest advance in diagnosis lay, he said, in accurate X ray examinations; though even here one must not expect the miraculous. He referred to the occurrence of venous thrombosis as a valuable sign of early carcinoma of the stomach (Prof. T. G. Moorhead), and cited four cases where its value was illustrated. The speaker was of the opinion that if there was no gain in weight, or at least maintenance of weight, after efficient medical treatment, malignant disease should be suspected and exploration was then more than justified. He recognised a definite "pernicious anæmia type" of carcinoma of the stomach, and held that should such cases not respond very rapidly to treatment by arsenic, malignant disease should be suspected. In dealing with the differential diagnosis, syphilis and gastric disturbances in pulmonary tuberculosis, diabetes and actinomycosis, were described as conditions likely to be confused with malignant disease of the stomach.

Proceeding to the question as to whether gastric ulcer was or was not a precursor of carcinoma, the speaker instanced several cases of undoubted implantation of carcinoma on a chronic ulcer, but admitted that most cases of carcinoma on which he had operated arose without symptoms which would suggest the presence of a previous ulcer. He did not believe that palliative operations were of much value. The value of radium in the treatment of carcinoma was undoubted. The two-stage operation for removal of the carcinoma was seldom, if ever, necessary, and he found the shock from gastrectomy of the Mayo-Moynihan-Polya type to be surprisingly small. Sir William Wheeler then described a very interesting case, in which he had removed, apparently, the whole stomach for a non-malignant ulcer. His address was illustrated by slides and X ray photographs.

Dr. E. I. Spriggs spoke of the

Clinical Manifestations and Early Diagnosis

of cancer of the stomach, excluding the use of laboratory methods. He first gave an account of the classical symptoms—vague discomfort occurring in elderly men, with gastric flatulence and loss of appetite gradually developing into nausea, eructation merging into vomiting, pain either in the pit of the stomach, the small of the back, or between the shoulders; then later, a tumour, loss of weight, colour, and vigour; and finally, ulceration, coffee-ground vomit, mild irregular fever, involvement of other structures, and death in two years. He compared these symptoms with those described in 25 chosen cases, in which a very full history was obtained. In 17 the history was recent; in four it was long. The history of old indigestion, he pointed out, must not be allowed to obscure the diagnosis. Dr. Spriggs compared the symptoms according to the part of the stomach involved. In cases where the carcinoma was situated at the cardiac end, eructation was more common than in other types. After a time the symptoms gradually merged into those of œsophageal obstruction. In cases of the "leather bottle" type, the patient early complained of an aversion to food. When the neoplasm was situated at the pyloric end of the stomach, there was always pain after food, which might, or might not, be relieved by more food. The history was never clear-cut. Vomiting of large quantities of food at intervals of two or three days, he considered, was a very rare sign in cases of malignant disease. In three of his cases hæmatemesis was the first evidence of the presence of malignant disease. An anxious expression was sometimes present, and, if present, was sufficiently characteristic to be an aid to diagnosis. Finally, the speaker expressed his opinion that the first most vital step towards a diagnosis of carcinoma was not the clinical study of the patient. He believed that investigation should be carried out at once—that there should be no "watching"—and that carcinoma should be excluded at the earliest possible moment. X ray examination he considered the most important. All examinations should be very complete, and if the diagnosis was still in doubt an exploratory operation should be performed.

Dr. A. F. Hurst dealt mainly with the methods of investigation of the patient. He strongly urged that doctors should send their patients early to the radiographer, and that patients should be encouraged to come early to their doctors, even for vague pain. He discussed the methods of examination of the stomach content, chemical and microscopical. With reference to the examination for pus, he recommended routine examination of the "spittle." He considered that the presence of blood in every part of a fractional test-meal was evidence of malignant disease unless there had been a recent hæmorrhage from an ulcer. He was of the opinion that a skilled radiographer could show an abnormality of the stomach in 100 per cent. of cases of malignant disease. A fallacy was present if the stomach was not empty when the examination was made, for the barium might then appear low down, because it had sunk to the bottom of a full stomach. Occult blood was present in 100 per cent. of cases and the examination for its presence was of the utmost importance. It was never present in normal people, and although it was found in patients suffering from a gastric ulcer that condition could be distinguished by X ray examination. Examination of the blood for megalocytosis was important in the differential diagnosis of pernicious anæmia. Dr. Hurst showed slides illustrating this point and described a method of measuring the cells.

Pathology of Gastric Carcinoma.

Prof. M. J. Stewart dealt with the pathology of carcinoma of the stomach, the relation of ulcer to carcinoma, the mode of spread of the carcinoma, and the frequency of secondary deposits in the liver. He presented an analysis of 165 cases examined in the post-mortem room. Of these, 82 per cent. were between the ages of 40 and 70, and the proportion of males to females was 2 to 1. His address was illustrated by a series of microscopical specimens showing sections of chronic ulcer and of malignant disease. In a series of 216 clinical specimens of gastric ulcer and carcinoma 9·5 per cent. showed carcinoma implanted on a chronic ulcer.

Dr. Gregory Cole (New York) said that five years ago it was taught in America that 68 per cent. of cases of gastric ulcer became malignant. In one-tenth of the ulcer cases he had seen in the last ten years he could not say whether they were malignant or not, in the remaining 90 per cent. he had only seen one in which carcinoma developed in the neighbourhood of a chronic ulcer.

Mr. John Morley, although he considered the idea that carcinoma was often implanted on a chronic ulcer attractive and that it would lend point to the advice to patients to be investigated early, nevertheless doubted its truth. He drew attention to the possibility of a mistake in microscopical diagnosis in those cases where, as had been pointed out by Sir Bernard Spilsbury, there might be proliferation of cells at the edge of an ulcer. Where the history of indigestion was recent—under 12 months' duration—there was a strong likelihood of the presence of malignant disease. He was of the opinion that carcinoma originating in a chronic ulcer was rare.

Dr. W. D. Haggard (Tennessee) said that in dealing with ulcers the operation of wide excision with the cautery and subsequent examination was of great value. He believed in the two-stage operation in late cases. He said that in America they were still looking "like the wise men towards the East for inspiration."

Mr. A. H. Burgess (Manchester) considered early diagnosis of penultimate importance. Surgical treatment must, as always, aim at radical extirpation. He instanced ascites, secondary deposits in the liver or the peritoneum (which might be felt in Douglas's pouch by rectal examination) as contra-indications to radical operation. Fixity to the liver or to the pancreas were not necessarily contra-indications. If the middle colic artery was certain to be damaged, owing to extent of growth to be removed, he thought the case should be left alone. He considered palliative gastro-jejunostomy was indicated only if there was obstruction. He then dealt with the operative details and demonstrated a stomach clamp.

Dr. C. L. Starr (Toronto) emphasised the importance of not "watching." If glands were enlarged, cure was impossible. He did not believe in exploratory operations, except in a limited number of cases.

Mr. Garnet Wright considered that clinical evidence was mainly against the probability of the development of carcinoma on top of a chronic ulcer.

Mr. R. P. Rowlands described a case of primary tuberculous ulcer, which he had treated by resection. He did not consider exploration dangerous in early cases, nor did he think that damage to the middle colic artery was a serious matter.

Mr. H. S. Souttar described two "ludicrously" inoperable cases with which he had dealt, doing a gastro-jejunostomy in the one and a resection in the other, and had succeeded in giving both of them several months of comfortable life. He described and eulogised Schumacher's clamp.

Sir Berkeley Moynihan (President of the Section) stated that surgery had out-paced medicine in the treatment of carcinoma of the stomach. There was very little chance of improvement under medical treatment, but there must always be a certain mortality in cases operated upon. He did not consider that the omentum need be removed—in fact, he left it and used it as a cover for the field of operation. Operations of the type Billroth No. 1 were only suitable for ulcer cases. Examination should be made as often and as fully as possible. There were many methods of operation—each useful. Patients must always be made fit for their operation; there was no great hurry and time spent in transfusion of blood, glucose injections, artificial and real sunlight was time well spent indeed. The President considered that the profession should teach the public about carcinoma, and he put forward the suggestion that the Ministry of Health should send out doctors to preach the gospel of health. If it was suspected that a patient was threatened with carcinoma, the experts should be gathered around him at once.

The openers then briefly replied.

THURSDAY, JULY 23RD.

Treatment of Primary Acute Intestinal Obstruction.

A discussion on this subject was opened by Sir William Taylor (Regius Professor of Surgery, Dublin University). He stated that the surgery of the acute abdomen had advanced so satisfactorily during the past 25 years, with the sole exception of acute intestinal obstruction, that one was compelled to ask why the mortality from that condition was to-day no better than it was at the beginning of the century. He attributed this appalling state of affairs to the ignorance and carelessness, both inexcusable and nothing short of criminal, of the general practitioners and physicians, who see these unfortunate patients in the earlierst ages of their illness. Instead of realising that purgatives and enemata could do no good, but, on the other hand, might do infinite harm—apart from the delay in surgical treatment their administration entailed—these practitioners were continually laying themselves open to an action at law for malpractice or, worse still, they ran the risk of being placed in the dock for manslaughter. The speaker estimated the true mortality of acute intestinal obstruction as nearer 60 per cent. than the figure usually given (35–40 per cent.)—an alarming state of affairs. It was a mystery to him, he said, that general practitioners and physicians, all of whom had come to recognise that the only satisfactory treatment for all other acute intra-abdominal conditions was early surgical interference, could not come to the same conclusion with regard to acute intestinal obstruction. Apart from acute intussusception, the speaker recognised three stages of obstruction: (1) Where (within 24 hours of onset) the patient's general condition was good and there was little or no distension; (2) where (within the second, third, or fourth day) the patient's general condition was still good, but there was considerable distension and the vomiting was severe; and (3) where the general condition was bad: pulse feeble, vomiting continuous and stercoraceous, abdomen distended, and the patient profoundly poisoned. Treatment in the first stage consisted in washing out the stomach with sodium bicarbonate solution and free opening of the abdomen under a general anæsthetic. When the obstruction had been dealt with the stomach was again washed out. In the second stage, the obstruction was similarly dealt with and removed, but, in addition to this, a separate incision was made through the left rectus above the umbilicus and a high loop of jejunum was brought out. A tube of 7 or 8 mm. diameter was fastened into this, after the method of Senn's gastrostomy, and by means of which the jejunum was drained and irrigated with sodium bicarbonate solution. Later the patient might be supplied with sodium bicarbonate and glucose by the same means. In the third stage, Sir William Taylor advised local infiltration of the abdominal wall and withdrawal of a loop of jejunum as above. Should the patient survive, the obstruction might be dealt with later. The washing out of the stomach in these cases is of paramount importance. In obstruction of the large bowel, cæcostomy after the manner of Sir Harold Stiles gave the best results so far as tiding the patient over his immediate dangers was concerned. The speaker then dealt with the condition of acute intussusception, and stated that in his practice it was the most common cause of acute intestinal obstruction. In these cases there could be no excuse for failing to make a diagnosis. He himself had had a total of 81 cases with only three deaths. In cases of obstruction of the adynamic type, Mr. Sampson Handley's method left little to be said on the subject, but Sir William Taylor was of opinion that in very severe cases jejunostomy with siphonage and gastric lavage, combined with morphia, might help the patient for a few days. Finally, he said, until physicians and general practitioners realised that there was only one legitimate treatment for acute intestinal obstruction—namely, early operation—we could not hope to improve our results.

Mr. Sampson Handley considered that the high mortality in obstruction cases was, at least in part, due to the fact that these operations were frequently done by medical men whose skill and training did not justify them in undertaking such a serious responsibility. He also blamed the authors of surgical text-books, whose description of the signs and symptoms of acute intestinal obstruction was often lamentably vague and confused. Mr. Handley insisted on the great value of the "two-enema" test—on the failure of the second enema the diagnosis might be considered as settled. He then dealt at length with the operation of precautionary lateral anastomosis and illustrated his points with diagrams. Death in general peritonitis was usually due to obstruction and not to the peritonitis as such, and the speaker believed that the recovery-rate, even in cases after obstruction had supervened, amounted to 75 per cent., if treatment was prompt.

Prof. D. P. D. Wilkie (Edinburgh) considered that the drainage and washing out of upper coils of intestine in late cases was of the utmost importance. He differentiated various forms of acute intestinal obstruction—such as the "closed-loop" obstruction and the "strangulation" type with its severe degree of shock. In cases of carcinoma causing obstruction, drainage of the bowel above without treating the carcinoma in the first instance was indicated. He considered that in old people with obstruction, the operation of bringing the loop outside, leaving it outside, and then excising it later, was a good one. He referred to operations for the drainage of the lymphatic system and emphasised the great importance of giving enormous quantities of fluid to patients with obstruction, as the chloride deficiency was made good by the fluid.

Mr. Ernest Cowell dealt with cases of acute intestinal obstruction occurring in elderly people and due to causes other than carcinoma. He summarised the notes of nine cases that he had met with and insisted on the importance of the early admission of doubtful cases for treatment.

Mr. Rowlands reported the statistics from Guy's Hospital for the years 1920–24. He considered that some deaths were undoubtedly due to errors of technique, and that though in early cases the operations were easy, in late cases they were very difficult. He believed in jejunostomy with drainage and siphonage in the late cases, and was of opinion that in cases of carcinoma a rapid examination of the abdomen should be carried out at the time of the drainage operation.

Mr. Max Page presented the statistics from St. Thomas's Hospital for the years 1920–24. He also showed a set of charts, comparing in a most interesting way the results of operations in 1900 to 1910.

Colonel Primrose (Toronto) spoke briefly of the operation for drainage of the lymphatic system. He considered the administration of sodium chloride intravenously as of great value in severe cases. Where the efficiency of the ileo-cæcal valve was destroyed, the seriousness of the prognosis, he said, was much increased.

Mr. Reginald Vick presented the statistics from St. Bartholomew's Hospital for the years 1920–24. He pointed out that the doctor was so often sent for only in the late stages, and that this was due to the disappearance of all pain, when gangrene had set in. He advocated the system of observation beds to which patients could be admitted before the diagnosis was certain, and described the working of this system at St. Bartholomew's Hospital.

Mr. Grey Turner presented the statistics from Newcastle Infirmary. The mortality for the radical cure of external hernia was ¼ per cent.; for the cases with strangulation it was 20 per cent. The moral, he said, was obvious. He had seen little improvement in results in cases where toxæmia was established. Mr. Turner emphasised the fact that, in his opinion, fæcal vomiting was not a sign of intestinal obstruction but of impending death. He believed in the enema test and the calomel test, consisting in small doses of calomel at short intervals, the administration of which would either relieve the condition or complete the picture. The education of the public had its dangers, but he thought that the circulation of leaflets giving the considered opinions of experts might well be circulated to the profession.

Mr. Burgess said he did not see how Sir William Taylor could claim that he was called in late to cases of acute intestinal obstruction and yet was able to show a series of 81 cases of intussusception with only three deaths. He considered distension to be a most valuable early sign of intestinal obstruction, and that it was very important to distinguish, as far as possible before operation, between obstruction in the large and the small intestine. Blind cæcostomy was indicated in cases with obstruction due to malignant disease. The speaker also drew attention to the very high mortality in cases due to obstruction by gall-stones, and asserted that, in some cases, the obstruction was undoubtedly due to the presence of two stones, one of which was missed.

Mr. Souttar presented the statistics of intestinal obstruction for the years 1920–24 for seven hospitals. The total was 3064. He dealt at some length with the various points and demonstrated them by means of graphs. The very great frequency of intussusception as a cause of intestinal obstruction—second only to femoral hernia—was shown, and its incidence was almost entirely in the first year of life. The analysis of the mortality among the 3064 cases was as follows:—

Cause of obstruction.	Per cent.	Cause of obstruction.	Per cent.
Gall-stones	50·0	Intussusception with tumour	35·0
Carcinoma	43·5	Volvulus	51·0
Adhesions	31·0	Inguinal hernia ..	16·0
Internal strangulation	33·0	Femoral hernia ..	20·0
Intussusception (idiopathic)	22·0	Umbilical hernia ..	35·0

Reply.

The President briefly replied, and stated that his good results in cases of intussusception were undoubtedly due to the fact that he had preached its signs, symptoms, and treatment at all times and in all places. He said that he was prepared to bear any amount of censure for his opening remarks, provided that they secured the result he aimed at—namely, the early operation in all cases of acute intestinal obstruction.

JOINT MEETING OF THE SECTIONS OF SURGERY AND ORTHOPÆDICS.

FRIDAY, JULY 24TH.

TREATMENT OF FRACTURES.

AT the joint meeting of these sections a discussion was held upon the treatment of fractures with special reference to its organisation and teaching. The Presidents of the two Sections, Sir Berkeley Moynihan (Surgery) and Prof. E. W. Hey Groves (Orthopædics), occupied the chair in the earlier and later parts of the meeting respectively.

Prof. G. E. Gask (London) held that although the plan of the segregation of fractures in special wards and under a special staff, advocated by Sir Robert Jones, might be of service to an occasional individual patient, it would involve such great difficulties in a teaching hospital that a change from the present organisation was not advisable. He professed himself opposed to the growing tide of specialism which first began when surgery was divorced from medicine by an edict of Pope Alexander III. in 1163. He shared the view of the late Sir Clifford Allbutt that this artificial separation of the two great branches of the healing art was the greatest blow that had befallen the profession and still constituted a weakness. Any further separation was to be deprecated and our efforts should rather be towards fusion. While it was obvious that those who specialised in a small subject could and did attain a higher degree of skill in that branch and had been the authors of many advances, such an argument could not be applied to the education of medical students, whose chief need was a firm grounding of the fundamental principles which were applicable to all types of injury and disease. The present medical curriculum was overloaded with special subjects, such as diseases of the eye; of the ear, nose, and throat; lunacy; fevers, and so forth; and there was a danger that in the desire to teach a smattering of everything the main principles of medicine would be forgotten. His own hospital recognised this danger when, after long discussion, they decided not to establish a separate department of urology. Certain of the younger members of the staff were, however, encouraged to take up and teach this specialty in conjunction with their ordinary work as general surgeons. Thus the student was enabled to start his professional work with the knowledge that there was no mystery about the use of the cystoscope and that with practice he might

attain sufficient skill in handling it to make it a valuable addition to his armament as a general practitioner. Sir Robert Jones's recommendation, if carried into effect, would establish a fresh department and still further subdivide the student's education. It was his belief that any defects in the treatment of fractures at the great centres of medical education would speedily be remedied without recourse to such a step. Medical schools were very sensitive to public opinion, and the fact that it had been thought necessary to hold such a discussion and the publicity given to it would, in itself, be sufficient to stimulate them to make any essential reforms in that branch of their work.

Sir Robert Jones (Liverpool) held that the treatment of fractures was not as good as it should be and that the great teaching hospitals should give a lead to better things. Fractures were regarded as an incubus in most of the general surgical wards; they were of little interest to the majority of general surgeons, whose house surgeons were encouraged to discharge them at the earliest possible moment to make room for patients who needed some form of operative treatment. And the treatment of out-patient fracture cases, which was left almost entirely to the inexpert resident staff without any supervision by the surgeons themselves, was even worse. One very frequently saw lamentable deformities, which should not have arisen, follow fractures treated at teaching hospitals. He maintained that the treatment of the patient should be the first consideration at all hospitals and that the training of medical students even at the teaching hospitals was a secondary matter, although he did not admit that the segregation of fractures, which he advocated, need involve any insuperable difficulty in medical education. The "segregation scheme" was already in successful operation in many teaching hospitals in America and in several in this country with marked benefit to the patients and no ill-effect upon medical education. The results which might be achieved by his scheme were illustrated by those obtained in the cases of fractured femur during the latter part of the war (when specially trained staffs were available) which were better than any ever attained before. The lesson which should have been learnt then was already being forgotten, and again one saw gross errors in the treatment of common fractures which arose, he thought, from lack of interest on the part of many of those who held the responsibility for treatment. His scheme of segregation of all fractures in one department, not necessarily under an orthopædic surgeon or indeed under any one surgeon, would lead to comparison of results and a healthy rivalry between those in charge, with resulting benefit to both patient and surgeon. Only those surgeons who took an interest in this work need participate in it, and others would be glad to be relieved of the responsibility and freer to carry on the work in which they were more especially concerned.

Mr. S. W. Daw gave details of the working of a special fracture department under his charge at Leeds. He emphasised the teaching value of a resident orthopædic officer working under the general or orthopædic surgeons. This officer did a daily teaching round and gave demonstrations of details of splintage and the many items that needed daily supervision in a manner that the heads of departments had neither the time nor the patience to do.

Dr. R. Osgood (Boston, Mass., U.S.A.) said that a scheme of the type advocated by Sir Robert Jones had been in operation in his hospital for some years. Prior to this some fractures—in particular the not uncommon compression fracture of the spine—were not recognised, and others had resulted in unnecessary crippling of patients. As a result the great industrial concerns had been forced to form their own fracture clinics and this had stimulated the medical profession in America to take a greater interest in fractures. At a conference between surgeons from all parts of the United States a syllabus of standardised treatment of fractures was agreed upon and published. Dr. Osgood gave details of the intensive teaching of students, at the fracture service, which appeared to be very thorough.

Mr. Henry Wade (Edinburgh) commented upon the general agreement that the treatment of fractures was at present unsatisfactory, and pointed out the heavy financial cost of failures to the employer of labour. One employer had told him that a case of malunited fracture of the femur cost from £500 to £1000. No argument as to the interests of the medical student was admissible when those of the patient were compromised by the present system. But in point of fact segregation gave opportunities for that hour-to-hour teaching by a whole-time officer which was so necessary in this special department.

Mr. H. Platt (Manchester) had had charge of a fracture service for 12 years, during which 40 residents had passed through the department, the majority of whom were now in general practice. These men were able to deal with fractures in their own practices with confidence and ability.

Mr. H. A. T. Fairbank (London) had charge of a fracture service and found that it possessed many advantages from the teaching point of view, since in one hour many types of fracture could be seen and demonstrated, and the apparatus used could be standardised so as to combine simplicity with efficiency. He admitted, however, the difficulty of getting the student to attend a fresh department, and suggested a revision of the curriculum to enable more time to be devoted to this important branch.

Mr. H. H. Sampson (Birmingham) was averse to segregation from the teaching point of view. He pointed out that to be efficient the fracture service would have to be a night-and-day one, since the ultimate result depended largely on the officer (usually the casualty house surgeon) who first saw the case and splinted it. Should a separate department be established the problem of the allocation of the student's time, already overburdened, would be reopened, and, finally, the ordinary house surgeon would lose the benefit of having handled these cases which were so instructive to him in general practice later.

Mr. Max Page (London) did not approve of the creation of a new specialty. For the general practitioner in the country and for the doctors in the services and abroad it was essential that instruction in the treatment of fractures should be a part of the ordinary surgical curriculum, and not regarded as a specialist's department. If segregation were adopted it must fulfil this condition.

Prof. A. W. Sheen (Cardiff) was also averse to making a new specialty. He pointed out that in many emergency conditions, particularly those arising from motor accidents, the fractures played but a small part in the condition, which might call for the excision of wounds, blood transfusion, and other measures directed against shock which would not come within the province of a fracture specialist. He advocated instead the establishment at the teaching hospitals of one or more large surgical teams which should include one member with a special training in fracture work as well as experts in other departments. He agreed, however, on the advisability of establishing a special fracture out-patient department. The student could not be expected to become expert or even familiar with all fractures, but should have his teaching concentrated upon the commoner ones. A "follow-up" of fracture cases showed that many results were much worse than they should be.

Mr. Gwynne Williams (London) remarked that the active treatment of a fracture only ceased when the patient was restored to full activity, whereas, for example, in the average case of appendicitis the treatment was practically concluded at the operation. For this reason he made one student responsible for each fracture case, who should as far as possible see the case through to a conclusion. It was very important that if any change was to be made the ordinary residents should still have opportunities of handling fracture cases.

Mr. McAdam Eccles (London) was against segregation, mainly because of the difficulties it would involve in teaching. To establish a fracture ward would also entail a large increase in beds devoted to this service with a consequent reduction of those available for general surgical work. Already the establishment of separate departments for venereal disease and tuberculosis had resulted in a reduction of the opportunities afforded the student of studying these cases. He maintained that the present system at St. Bartholomew's, while not the ideal one for every fracture case, was the best possible in the long run for the average fracture.

Mr. R. C. Elmslie (London) pointed out that over 100 years ago St. Bartholomew's Hospital had appointed two surgeons specially to deal with fractures, although the office had been allowed to lapse. He complained of the lack of proportion in the allotment of the student's time, and that much of it was wasted in watching operations and writing them up which might more usefully be employed in learning more of the subject under discussion. A fracture ward, the beds of which were open to all the surgeons, would promote rivalry while leading to standardisation of apparatus so that the student might have a clear-cut picture of one treatment for each fracture instead of a confused picture of many. It would be easy to arrange space in the student's curriculum (at least at his own hospital) to carry out the reform.

Prof. A. Fullerton (Belfast) did not consider a separate fracture service necessary at his hospital. Though his beds were limited he never refused a fracture case and devoted much time to them with gratifying results. His house surgeons, who were taught to regard shortening of one inch or a stiff knee after fracture of the femur as a disgrace, shared his enthusiasm. As a result, the average shortening in his last 40 cases of fracture of the shaft of the femur was under one-quarter of an inch. Many fractures must of necessity be treated in small cottage hospitals or even in their own homes by ex-dressers; he therefore felt that it was important that instruction in fractures should be a part of the student's general surgical training and not handed over to a special department.

Mr. W. R. Bristow (London) urged that the example of gynæcology, with its separate staff, residents, nurses, and wards, proved that teaching need not suffer by the establishment of a separate department. He supported the suggestion that the student's time-table should be reorganised, and maintained that the proper teaching of fractures could only be obtained by segregation.

Mr. R. C. Affleck made a plea for greater simplicity. The late Prof. Lucas-Championnière was not ashamed to exhibit to the world the results he was able to attain without any apparatus at all. The speaker maintained that the proper place to treat any fracture was in the nearest bed. He had recently been in an operating theatre where fractures were treated, and a list of the instruments kept there contained over 1000 items.

Dr. A. T. Bazin (Montreal) said that at his hospital there was a fracture department under his charge, but not all fractures came to the department. In over 2000 cases they had no case where amputation had to be performed, although one or two came into the department with a recent amputation. There were three cases of delayed union, no cases of non-union, and no operations for plating were performed; but three plates were removed from cases transferred from elsewhere. It was acknowledged that the results obtained in the fracture clinic were better than those of the general surgical wards in the same hospital. Students received tuition in the clinic and, indeed, the teaching had proved so successful that they were now asked to extend their work in that direction.

Prof. Hey Groves remarked, from the chair, on the virtual unanimity of all the speakers that there was room for improvement in the present treatment of fractures in general surgical wards. War experience had made us unsatisfied with present results. It should not be thought that the discussion exhibited a gulf between the general and the orthopædic surgeons; Major M. Sinclair's work in connexion with fractures of the femur was sufficient to show what could be done by the general surgeon in the treatment of fractures when his interest was stimulated.

SECTION OF ORTHOPÆDICS.

THURSDAY, JULY 23RD.

TUBERCULOUS DISEASE OF THE SPINE.

Under the presidency of Prof. E. W. Hey Groves (Bristol), Sir Henry Gauvain, in the unavoidable absence of Dr. J. Calvé (Berck), opened a discussion on this subject. He commented on the great improvement in the treatment of Pott's disease which had taken place during the last 20 years. The severe deformities—so common years ago—were now comparatively rare. Bacteriological investigations conducted by Dr. Stanley Griffith (Cambridge) suggested that the number of cases of Pott's disease due to the bovine bacillus was on the increase, so that the problem was intimately concerned with the campaign for the provision of a pure milk-supply. In the therapeutics of this condition the value of general measures and adjuvant treatment, such as heliotherapy and artificial light, was universally accepted. He believed that the general mortality of Pott's disease had been reduced considerably by the introduction and adoption of the aspiration of abscesses. Calvé's intraspinal tapping of an abscess producing paraplegia was a valuable addition to our treatment methods. With Calvé and others the speaker deprecated the performance of any of the ankylosing operations—e.g., Albee bone-graft or Hibbs's operation—in children. In the adult, however, such operations were founded on sound principles. The mechanical methods used at the Treloar Hospital, Alton, were next described and illustrated by lantern slides.

Mr. G. R. Girdlestone (Oxford) believed that the ankylosing operations had a certain rôle in the treatment of children with Pott's disease. It was not unusual to find that the deformity increased in ambulatory patients who had had efficient early treatment. In such cases a spinal fusion was an added safeguard. The technique he adopted was that of Hibbs, with the addition of osteo-periosteal grafts laid on each side of the spinous processes. The problem of Pott's disease in the adult was much more formidable, and especially where sinuses had developed. In his own hospital out of a consecutive series of 30 adult cases, 9 were admitted with sinuses—of the latter, 8 died after varying periods. Mr. Girdlestone advocated very free operative drainage in all such infected cases.

Dr. W. T. Pugh (Carshalton) declared himself as an uncompromising opponent of spinal fusion operations in children. He emphasised the potential dangers of hyperextending the spine at the level of the disease during the period of recumbency on a frame. He chose a suitable level of the spine at which to produce a compensatory lordosis, and hyperextended the frame accordingly. It was necessary in the ambulatory stage to use a jacket which controlled the spine and allowed for growth; otherwise late deformity would develop.

Mr. D. McCrae Aitken (London) said he was in favour of complete and uninterrupted immobilisation during the stage of recumbency. He carried out spinal fusion by operation almost as a routine, but with no neglect of adequate splinting. The operation was not suitable for young children and should only be performed after deformity had been corrected. It was especially successful in the cervical and lumbar regions.

Mr. F. C. Pybus (Newcastle) emphasised the necessity for a prolonged period of after-care. The criteria of cure were not easy to define although valuable information was gained from a scrutiny

of successive radiograms. In his hands the treatment of cold abscesses by open evacuation with careful sponging and subsequent closure had given excellent results.

Mr. S. Alwyn Smith (Cardiff) condemned wholeheartedly open operations for cold abscesses. He deprecated the tendency to cut down the period of recumbency.

Mr. R. C. Elmslie (London) referred to his surveys of crippled children in the London County Council schools, which had shown in a most striking manner the value of the provision of country hospitals. He did not consider that it was always advisable to attempt to correct an established kyphus; in any case correction was apparent only and was gained by providing compensatory curves. In his opinion the ankylosing operations had come to stay. He operated on patients over the age of 14 years at a stage when the disease was becoming quiescent. Adequate post-operative treatment was, of course, an essential.

Mr. H. A. T. Fairbank (London) dealt with the difficulties in diagnosis. Developmental anomalies of the spine and new growths might simulate Pott's disease. A number of radiograms illustrating such cases were exhibited. He practised spinal fusion operations in patients over 14 years, and he believed it was better to ankylose a less limited area of the spine than was generally taught. He had met with a few cases where there were two foci of spinal disease at different levels. He agreed with Mr. Girdlestone that very free drainage should be established in all sinus cases.

Mr. T. P. McMurray (Liverpool) considered that patients with sinuses did much better when allowed to walk about wearing a suitable spinal brace. In his opinion the ankylosing operations should be reserved for adults.

Prof. R. B. Osgood (Boston) quoted his impression of Scandinavian clinics, which he had recently visited, and said that one was bound to recognise that with what might be termed partial immobilisation very perfect results were obtained. The findings of the Commission of the American Orthopædic Association on the value of the spinal fusion operations were quoted—namely, that such operations did not, in themselves, control the advance of the disease or deformity. In his own clinic an operation of the Hibbs's type combined with osteo-periosteal "ribbon" grafts was practised; he did not consider the Hibbs's operation as inherently difficult. In adult patients it was evident that multiple foci of disease at different levels were not infrequently seen. Difficulty in diagnosis arose and, in adults, in the early stages syphilis, malignant disease, and multiple myelomatosis must always be borne in mind.

Mr. S. W. Daw (Leeds) thought it was wise to avoid too great a degree of hyperextension of the spine during the recumbency stage. He had experienced very good results from spinal fusion, but he did not do the operation in children.

Dr. T. Hartley Martin (Leasowe) had employed Calvé's method of intraspinal aspiration in a number of cases, and he did not think the method had any special dangers. It was not difficult if one practised first on the cadaver. It must be recognised that relief from paraplegic symptoms could only follow in cases where the compression was due to the presence of an abscess sufficiently liquid to be tapped.

Sir William de Courcy Wheeler regarded the operation of spinal fusion as a valuable addition to recognised conservative methods. His method was to implant a graft on the rawed surfaces of the laminæ.

The discussion closed with the reply of Sir Henry Gauvain.

OSGOOD-SCHLATTER DISEASE.

Mr. R. Ollerenshaw (Manchester), in a short paper illustrated by radiograms, presented an analysis of 32 cases he had dealt with personally. He considered that in childhood two lesions occurred consequent upon sudden traction on the lower quadriceps mechanism, (*a*) a traction-fracture of the tip of the upper tibial epiphysis (Osgood-Schlatter disease), or (*b*) a fracture of the lower end of the patella. In three cases where both knees were simultaneously injured one side showed the first type of lesion and the other the second type. Both types were therefore representative of the common fractures of the patella in adults. The treatment advised was complete immobilisation for one month, followed by a period of six weeks, during which the range of knee flexion was restricted.

Prof. Osgood referred to the effects of traction by such a strong tendon on an actively growing epiphysis. He agreed that although the earlier cases he described had all occurred in boys, it had since been found that girls were equally liable. In some cases it was possible to obtain a cure by simple strapping down of the patella.

SECTION OF DISEASES OF CHILDREN.

THURSDAY, JULY 23RD.

Treatment of Empyema.

Dr. Carey F. Coombs, who presided in the absence of Dr. Robert Hutchison, said that the subject of empyema had made considerable progress of recent years, but it was time that we discovered the effect of war surgery on its treatment; whether, for instance, primary suture had been found to answer in civil life. An increased sense of responsibility towards cases of empyema had arisen in the medical profession. It was no longer regarded as something to be dealt with by telling the house physician to make an incision. Its treatment required the coöperation of physician and surgeon.

Dr. Hector C. Cameron, in opening the discussion, confined himself to the medical aspects of empyema. In infants the condition had a very high mortality: 75 per cent. in the first year and 50 per cent. in the second year of life. In the third year the figure dropped to 18 per cent. and thereafter remained at about 6 per cent. The high mortality of the first two years of life was due to the long duration of pneumonia at that age. It was always a favourable feature when the rise of temperature due to the pneumonia was separated from that due to the empyema by an interval of time (metapneumonic empyema). If the empyema developed when the pneumonic condition was still active (synpneumonic empyema) the prognosis was not so good. Empyema in young children was generally synpneumonic owing to the duration of the attack of pneumonia. In the third year of life the short-lived lobar type of pneumonia became the rule, and empyema was of the metapneumonic type with corresponding improvement in the prognosis. Among adults and older children synpneumonic empyema hardly ever occurred except with influenzal pneumonia. The distinction between synpneumonic and metapneumonic empyema was important from the point of view of treatment. Rib resection was apt to be fatal in the former type though followed with most satisfactory results in the latter. The best results in synpneumonic empyema were obtained by aspirating the pus until the lung condition had improved, when an operation might be performed. But successful treatment was not concerned merely with saving life. It was necessary to restore the function of the lung. Expansion of the lung was most often prevented by thickened pleura and the formation of fibrous tissue around the cavity. This result was due to delay in the establishment of satisfactory drainage, insufficient drainage, or to secondary infection, presence of a bronchial or pulmonary fistula, or of a foreign body in the cavity. Early diagnosis and operation at the right moment were of the greatest importance in preventing chronic empyema. Once the lung was bound down by rigid fibrous tissue decortication alone would release it.

Mr. Henry S. Souttar analysed the cases treated in the London Hospital for the last 15 years. Half the cases occurred under the age of 10, and 70 per cent.

of these were between the ages of 1 and 6. The mortality was highest in the first year, 73 per cent., but the number of cases was small. In the second, third, and fourth years the number of cases was larger and the death-rate was from 40 to 60 per cent. The mode of onset was important in prognosis and treatment. When empyema occurred as one feature of a general infection it was often fatal, and any attempt at radical treatment would lead to disaster. When it followed a subsiding pneumonia operation was indicated and the outlook was good. Probably empyema of itself was never fatal. Death was due to accompanying disease of which empyema was only a particular manifestation. The type of infecting organism was important. The mortality in pneumococcal infection was 6 per cent., in streptococcal 24 per cent. In pneumococcal empyema massive adhesions formed, limiting the disease and preventing gross collapse of the lung. Ultimately the adhesions might delay recovery and lead to chronic empyema, but in the acute stage they were of service. In this type the best treatment was to open the cavity freely, evacuate the pus, clear out all solid masses of fibrin, and drain the cavity by a closed method. In young children an intercostal incision would give sufficient access, but in older children rib resection was more satisfactory. The pus must be evacuated slowly.

In the non-adherent form of empyema repeated aspiration was indicated for perhaps five or six days. The form of operation then undertaken would depend on the patient's condition. The post-operative treatment was most important. Sterilisation of the cavity and expansion of the lung were the objects to be achieved. Siphon drainage, and in some cases injection of saline or Dakin's solution, were the best means to this end. Local anæsthesia was contra-indicated in children. Ether or chloroform might be used, but the speaker preferred gas and oxygen as an anæsthetic for this operation.

Dr. F. G. Chandler, from the point of view of treatment, classified empyema into four groups: Ordinary (occurring after or during pneumonia), acute fulminating, chronic, and tuberculous. Rib resection was introduced by Arbuthnot Lane in 1882, and as a result mortality diminished considerably. At the same time our conceptions of disease were advancing and the importance of early diagnosis was being recognised. It was wrong, however, to employ rib resection as a routine in young children. Under the age of 4 it should never be necessary. He had seen cases end disastrously which might have been saved if preliminary aspiration or treatment by simple incision and drainage had been employed instead of resection. In the treatment of empyema four things had to be considered: The evacuation of pus, the expansion of the lung, the speediest convalescence, and the comfort of the patient. Suction drainage had been employed to bring about expansion of the lung, but in the speaker's opinion this was tackling the problem from the wrong aspect. If the lung did not expand it was because there was disease within it or because it was held prisoner by thickened pleura and adhesions. The latter could be dealt with mechanically or by irrigation with Dakin's solution. Fulminating empyema was usually due to a streptococcal infection. The only treatment was repeated gentle aspiration until the patient could support operation. It was important to aspirate slowly, replacing the fluid with air if the patient showed signs of cyanosis or collapse.

Mr. W. H. C. Romanis, while agreeing cordially with those speakers who laid stress on the mortality of empyema in young children, wished to call attention to the serious sequelæ of sinus formation, fibrosis of the lung, and bronchiectasis in patients who recovered. Surgically speaking, there were four chief kinds of empyema: those due to the pneumococcus, those due to the streptococcus and other organisms, those which were early, and those which were late. It was of the greatest importance to ascertain the nature of the organism before operation. The masses of fibrin formed in pneumococcal empyema often caused an alteration in the physical signs. In adults it was essential to remove the fibrin at operation as it would interfere with the healing of the wound and the expansion of the lung. But in children, although removal of solid masses of fibrin was important, everything had to be done to minimise shock, and therefore repeated aspiration should be tried before resorting to operation. There was no urgency about operating in pneumococcal empyema, in contradistinction to the streptococcal variety, in which some method of removing the pus should be proceeded with immediately. Aspiration might be practised at first; but if the patient did not improve in a day or two either operation or the insertion of a large cannula must be resorted to.

Mr. T. Twistington Higgins said he had no panacea to bring forward. Success in dealing with empyema depended on early and accurate diagnosis and efficient operative and post-operative treatment. The operative procedure employed would depend on the age and condition of the child, the character of the pus, and the size of the empyema. In his experience a knowledge of the bacteriology of the pus did not assist much in treatment. He had not found it possible to say that all pneumococcal cases should be opened and all streptococcal cases aspirated. Some indications of the patient's resistance might be obtained from noting the characters of the white cells and the extent of phagocytosis exhibited by them. Dr. Hugh Thursfield was endeavouring in this way to sort out cases which might have the chest wall closed after evacuation of the cavity. The closed system of drainage was best. Continuous aspiration was useful in some cases and could be carried out by the method of Poynton and Reynolds. Breathing exercises were of great benefit in promoting re-expansion of the lung.

Dr. Clarke gave his experience of primary closure in empyema. The type of case suitable for primary closure was the chronic case which gave so much trouble when dealt with by other methods. Out of 21 cases two healed by first intention. In the others the wound broke down, but all did well. Primary suture was worth trying because, even if the wound broke down, the patient was no worse off than if a tube had been inserted in the first place.

Dr. L. A. Parry said that happily there was agreement between the speakers on main points. He thought, however, that a piece of rib should be excised in all cases even in young children, though not more than 1 in. to 1½ in. was necessary. The game of soap-bubbles was excellent as an exercise for re-expansion of the lung.

Mr. R. A. Ramsay considered that the objection to rib resection in young children was that it made the operation longer and more severe. In infants all operative measures should be reduced to the shortest time. The difficulty that the incision was not large enough could be overcome by using two moderate-sized tubes side by side. After 24 hours a large tube could generally be inserted. When pus was evacuated from an empyema the diaphragm rose and the chest wall tended to fall in, thus obliterating the lower part of the cavity. It was therefore necessary to drain not at the lowest but at the highest point of the abscess. As the patient was in bed drainage would be equally efficient.

Dr. Wilkie Scott pointed out the difficulties encountered in dealing with very chronic cases of empyema. He raised the question whether in such cases it was not best to aspirate or to close the cavity by primary suture.

Mr. P. T. Crymble agreed with Mr. Ramsay that the incision should be made in the region of the fourth rib. He found treatment of chronic empyema most unsatisfactory. The cases relapsed constantly. Decortication was a dangerous operation.

Reply.

Dr. Cameron said in reply that the discussion clearly showed that in the details of surgical procedure—the site and the extent of the incision, the character of the drainage, and so forth—there was very great divergence of opinion. It seemed to him that the

prognosis was mainly determined by one consideration only, whether or not intervention was made at the right moment. He thought the same was true in pneumococcal peritonitis. The evacuation of a residual collection of pus gave brilliant results. The high mortality of pneumonia in young children limited the opportunities of securing this result.

Mr. Romanis replied for Mr. Souttar. He said that the details of technique had been thoroughly discussed. Primary closure was not an unreasonable procedure in adults, but it was open to objection in children. Resection of a rib added to the gravity of the operation in young children. A rib-spreader was necessary for exploration, for with it good access could be obtained. He agreed with the speakers who advocated high incision.

In our issue of August 8th, p. 286, in reference to the display at the exhibition at Bath, we alluded to the drugs S.U.P. 36 and S.U.M. 36, prepared by the British Dyestuffs Corporation, Ltd., as arseno-benzene preparations. We are informed by the Fine Chemicals Department of the Company that these products contain no arsenic in the molecule, and we are happy to correct the erroneous impression given by the note.

Reviews and Notices of Books.

MALARIA INOCULATION IN G.P.I.

Die Malariabehandlung der Progressiven Paralyse. By Dr. JOSEPH GERSTMANN. With a Foreword by Prof. J. WAGNER-JAUREGG. 1925. Pp. 229. G.M.12.

THE treatment of general paralysis of the insane by means of the inoculation of malaria has recently aroused considerable interest. This empirical method has been used in many countries during the last few years, and this book is a detailed account of its history and technique, and of the results obtained both by its pioneers and those who have followed them. We will not trace here the very interesting story in detail, but will leave that for readers of the book. It is sufficient to say now that, for some reason unknown, a succession of any febrile attacks will apparently counteract the disease; and the malarial excitant is chosen because it is very safe, is easily controlled with quinine, and is not communicable even by the anopheles mosquito. The account of the experiments which have established this last fact forms one of the most interesting side-issues in the book.

The author takes blood from an approved tertian malarial patient who has not had quinine and injects subcutaneously 1 c.cm. into the back, pricking deeply and distributing the injection over the different skin layers. The blood should come direct from the donor without delay. The incubation period is from 4 to 8 days normally and can be shortened by using intravenous instead of subcutaneous injection, but this is not recommended. Attacks of fever then proceed at regular intervals, and after 8 to 12, according to the condition of the patient, they are stopped with quinine, of which the usual dose is 8 gr. of the bisulphate twice a day for three days and then once a day for the next four. The exact dose is varied to suit the individual. The condition of the cardiovascular system is ascertained before injection, but the risk of the treatment is slight. Ten minims of the tr. strophanthus are given at the height of each malarial attack, and digitalis may be used throughout if the heart is weak. Treatment must be interrupted for a sudden drop in strength or for alarming heart or gastric symptoms, but not for anæmia or jaundice unless the anæmia be pernicious in type. If necessary, a small dose of quinine will hold up the fever for a few days, and 10 c.cm. of a 10 per cent. solution of sodium nucleinate given intravenously will restart it.

The indications depend on the age and general condition of the patient and on the form and duration of the paresis. The pyrexia is not dangerous, but if it be interrupted too soon the paresis is not affected. The author places the age-limit between 9 and 68 years, and his oldest case (of 62) is still enjoying a complete remission. Any patient of average strength and stamina can be treated, and aortitis in syphilitics does not counter-indicate treatment unless there is an aneurysm or evidence of myocardial degeneration. Active tuberculosis of the lungs has not been stimulated in the cases under the author's care, though others have reported to the contrary, while healed tubercle has never been lit up. The patient must be quinine-tolerant and not resistant, but quinine idiosyncrasy is a rare thing. The treatment is not suitable for private practice and should not be used in institutions unless the malarial infection is properly understood. Dr. Wagner-Jauregg once lost three patients out of four through the error of a military hospital in sending him a culture of malaria which was not tertian.

Dr. Gerstmann gives a very full statement of the results obtained both in the university clinic where he works in Vienna and in other institutions. He defines a "full" remission as a return to full working efficiency with a disappearance of all but the slightest psychic symptoms, and a "partial" remission as either good or slight. "Good" is a return to social life and light work, and "slight" is a slackening of acute symptoms with improvement enough to allow the patient to return home. Out of 1000 cases only 400 are quoted who have been kept under observation for two years, and of these 33 per cent. show lasting and complete remissions; 14 to 25 per cent. show good partial remissions, while the proportion of cases in which there has been minor improvement with arrest of the disease amounts to about 30 per cent. The symptomatic improvement was in many cases followed by a return to a negative Wassermann reaction in the cerebro-spinal fluid and a disappearance of cells, though the globulin reaction tended to persist. The simple dementing and maniacal forms of paresis are the most amenable to treatment, next come the periodic, and then the tabo-paretic varieties. The best prospects are afforded, naturally, where the condition is caught at an early stage. The method has been tried, but without success, in non-syphilitic paralyses.

Dr. Wagner-Jauregg and Dr. Gerstmann are still busy with the research which they hope will issue in establishing the malarial treatment as a specific remedy. Their book is extremely comprehensive and well arranged, and contains several good micro-photographs of brain tissue. Every angle of the subject is explored and discussed with thoroughness, and although the language is quite intelligible even to a moderate German scholar, it will be a great pity if an English translation is not published at once.

TREATMENT OF INTERSTITIAL KERATITIS.

A Preliminary Report. By R. LINDSAY REA, M.D., F.R.C.S., Ophthalmic Surgeon to West End Hospital for Nervous Diseases; Assistant Surgeon to Western Ophthalmic Hospital. London: H. K. Lewis. 1925. With three plates. Pp. 32. 2*s*. 6*d*.

THIS is a paper that was recently read before the Ophthalmological Section of the Royal Society of Medicine and covers much the same ground as an address on the same subject read by the author at the Bath meeting of the British Medical Association this year. Its interest lies first in relation to the diagnosis. The author apparently does not believe that any typical case of interstitial keratitis is non-syphilitic. Recent cases give a positive reaction to the Wassermann test, while those old cases which do not still give evidence of syphilis by a positive luetic curve with Lange's colloid gold test. Such has been Mr. Rea's experience, which is very different from that of some other authors, who attribute from 10 to 30 per cent. of the cases to tuberculosis. The other main point in this essay is the importance attributed to active treatment, and especially to

arsenical injections—preferably of novarsenobillon. Tables are appended contrasting the results of cases treated with those untreated, or treated only by atropin, or in which treatment was deferred till too late. There is a possible fallacy in this comparison in that the class of untreated or badly treated cases would naturally include many "chronics" who spend their lives in going from hospital to hospital without much material benefit. Allowing for this, however, the contrast is sufficiently striking.

This little volume is important in that it constitutes a definite challenge to those who still maintain that in interstitial keratitis the specific treatment for syphilis is of no effect. In Mr. Rea's view it is urgent.

BLOOD TRANSFUSION.

La Transfusion du Sang. Étude Biologique et Clinique. Par P. EMILE WEIL et PAUL ISCH-WALL. Paris: Masson et Cie. 1925. Pp. 247. Fr.20.

THE recent publication at Paris of a work on blood transfusion by Drs. Pauchet and Bécart has been followed after the lapse of only a few months by the appearance of a second work on the same subject by Drs. Emile Weil and Isch-Wall, which is the subject of the present review. Two books covering so nearly the same ground and published almost at the same time can only be regarded as rivals, and it may be stated at the outset that the book which is second in time of publication is easily first in merit. It is a book of greater authority than its predecessor, having been produced by two writers who have already made numerous contributions to the literature of transfusion, and shows evidence of a more thorough knowledge of the ramifications of the subject.

An interesting account of the history of transfusion is followed by chapters on the "biology" of transfusion in general and of citrated blood in particular. It is apparent from this section that the authors are convinced followers of the school of Lewisohn, and they advocate the use of citrated blood as opposed to the use of so-called "whole blood." They lay emphasis on the fact that citrated blood is to be regarded not as "modified blood," but as "stabilised blood," its general biological characters remaining unaltered. The calcium ions of the blood are inactivated by the addition of sodium citrate but are not destroyed, and are capable of regaining their activity when the citrate has been removed, as happens in the body of the recipient soon after the injection of the blood. Sodium citrate the authors believe also to be non-toxic in the quantities usually administered in the course of a transfusion.

Even at the present time surgeons can be found who regard the group reactions as being of theoretical interest but of no practical importance, this opinion being based on a happy immunity from "accidents" in performing transfusions with untested donors during the late war. It is instructive, therefore, to find in the present work an account of 12 transfusions performed by the authors before the group test had been introduced. Even in this short series of cases they experienced three serious "accidents," and no more conclusive evidence as to the practical importance of the test could be desired. First-hand information concerning these reactions is not usually found in works on transfusion, most writers having used only tested donors.

A section on the technique of transfusion is devoted largely to the description of a simple method of injecting citrated blood with a syringe as used by the authors. The employment of oxygenated blood described by Pauchet and Bécart is justly dismissed as a device which may satisfy the operator's complaisance without conferring any benefit on the patient. The authors claim, however, that the administration of forced oxygen through the patient's lungs during the transfusion is an additional measure of real value. The sections on the indications for transfusion are comprehensive, covering surgery, medicine, and obstetrics. The authors perhaps exaggerate the value of transfusion in the treatment of ruptured ectopic gestation when they state that some patients may be saved thereby from certain death. General experience goes to show that the hæmorrhage in this condition is seldom or never fatal, and that routine transfusion in treating it is unnecessary. Each chapter is provided with an adequate bibliography and there are a number of figures in the text.

The book may be recommended as an excellent and up-to-date monograph on an important subject. At the present rate of exchange it is very cheap.

THE EXTRA PHARMACOPŒIA.

Eighteenth edition. In two volumes. Vol. II. Revised by W. HARRISON MARTINDALE, Ph.Ch., F.C.S.; and W. WYNN WESTCOTT, M.B. Lond., D.P.H. Lond. London: H. K. Lewis and Co., Ltd. 1925. Pp. 728+xlii. 20*s*.

THIS volume constitutes an addendum to the first volume of the eighteenth edition, issued in October, 1924, but in many respects its compilation must have proved as strenuous a task as that of the main volume. The second volume provides a review of reviews (coupled with the authors' well-known laboratory notes) on analytical, experimental, and research work, covering with remarkable completeness the ever-multiplying specialities in these fields. The compilers are to be congratulated on their efforts in incorporating in this volume such very recent work as Gye and Barnard's researches on the filterable cancer virus, the use of the halogenised phenolphthalein compounds intravenously and per os as liver function tests and for gall-bladder visualisation, and induced malaria as a treatment for general paralysis. In the domain of chemistry a practically complete organic analysis chart, arranged in groups, is included, and an account is given of the investigations of flour and bread sold in London shops made as recently as May of this year. It is safe to say that there is no text-book at present on the market wherein these features are to be found. The chapter on radium and its congeners has been fully revised and several important alterations made in such factors as atomic weights, radio-active constants, &c., in the light of the 1923 International Table of Radio-active Elements. The (London) Radium Institute Reports up to 1925 are added.

In this volume the compilers have stolen a march on themselves by incorporating a good deal of material which they might have reserved for the next issue of Vol. I.; they are to be congratulated on their generosity, which has resulted in greatly enhancing the value of the present volume. Instances in point may be mentioned regarding treatment with organic antimony compounds, carbon tetrachloride, gentian violet, mercurochrome, and similar items which have lately been brought into prominence.

We trust that this invaluable work—indeed it is one of the few compilations that merit this adjective—will go on from strength to strength.

The death on July 30th of Dr. W. Wynn Westcott, an original joint compiler of the work, was noted in THE LANCET recently.

PHARMACEUTICAL POCKET-BOOK, 1925.

Eleventh edition. London: Pharmaceutical Press, Bloomsbury-square, W.C. Pp. 438. 3*s*. 6*d*.

THIS is a direct descendant of the Pharmacy Students' Pocket Note-Book which first appeared in 1906 and was then edited by Mr. John Humphrey. Now, with its new title, and under the guiding care of the Science Committee of the Pharmaceutical Society, it contains much new information of an extraordinarily varied character; in fact, it contains so much that in many directions it supplements usefully the text-books on the subject. In its routine pharmaceutical information it forms a summary for these text-books, which will be useful in revision for the pharmacy student. For the medical student who needs

less of the knowledge of the ways of pharmacy, it forms an ample stand-by.

But apart from the portion which touches on straightforward pharmacy there are many tables and sections useful to many folk. The dictionary of synonyms is extremely full, and will help the reader of ancient and modern books on medicines. The section on homœopathic pharmacy is all the more useful in so far as it is now so rarely found. "How to Make an Herbarium" is unexpected, but is interesting. The sections on sale of poisons and the Dangerous Drugs Acts, which end the book, are again of the greatest interest to the doctor and a perusal of them may save him much trouble.

PEDIATRICS.

By Various Authors. Edited by ISAAC A. ABT, M.D., Professor of Diseases of Children, Northwestern University Medical School, Chicago. London and Philadelphia: W. B. Saunders Company. Vols. IV.–VI. In eight volumes. £18 per set.

THESE three volumes maintain the standard of thoroughness and exhaustive detail found in the previous instalment. Vol. IV. opens with diseases of the pleura and lung, followed by a most valuable section on the physiology of the circulation, congenital heart disease, and the electro-cardiogram in childhood. Acquired heart disease is also fully dealt with. The account of blood diseases by Dr. W. Palmer Lucas is well written and balanced. On the other hand, the sections on infantilism and Mongolian idiocy are left unillustrated, and the latter, a comparatively common condition, is passed over with less than a page in a volume containing 1271. The section on enuresis by Dr. Wilburt C. Davison is admirable. The volume concludes with diseases of the kidneys, bladder, and genital organs.

Vol. V. contains diseases of the face and jaws, with a chapter on orthopædic surgery. The pathology of the bones is ably written by Dr. D. B. Phemister. Tuberculous disease, syphilis, dislocations, congenital and traumatic, of the bones and joints, are well illustrated and complete, and conform in the main to the teaching in this country. The chapter on surgery of infantile paralysis is one of the best. The volume concludes with chapters on tuberculosis and syphilis, malaria, and infection and immunity.

The greater part of Vol. VI. is devoted to the acute infections of childhood and infectious disease in general. Typhoid fever is given in great detail. Under acute rheumatism authors from this country are freely quoted. The treatment of whooping-cough with vaccines and X rays has evidently found more success in America than it has here. Influenza, scarlet fever, measles, and cerebro-spinal fever are dealt with in great detail. The volume concludes with chapters on anæsthesia in childhood, the peculiarities of surgery in childhood, and fœtal malformations. The chapter by Dr. Albert H. Byfield on arthritis deformans, which concludes the volume, is a satisfactory contribution.

THE STORY OF A CITY HOSPITAL, 1848–1925.

Published by the Hospital, Victoria Park. 1925.

NOT long ago the City of London Hospital for Diseases of the Chest changed its name by substituting "Heart and Lungs" for "Chest," but no matter what its official title may be, it will still remain to the medical as well as the lay public "Victoria Park Hospital." Its story has been pleasantly told by Lady Butterworth in a small book which the hospital authorities have just published as an appeal for funds, the whole cost of the publication being borne by certain supporters of the charity. The foundation of the charity was brought about on the familiar and simple lines of 70 years ago, when the need for special institutions was beginning to be obvious to broad-minded people. In 1848 "several gentlemen met at the London Tavern"—long famous, but now gone, and like to be forgotten—in Bishopsgate-street. The object of the meeting was to discuss measures to meet the wants of the poor of the East End suffering from chest disease, especially from consumption. The Brompton Hospital had been founded six years before, in what was then a semi-rural district, and the City-road Hospital was some 14 years older, but neither of these institutions supplied the wants of the East of London. The outcome of the meeting at the London Tavern was a dispensary in Liverpool-street, which was superseded in 1855 by the hospital near Victoria Park. The Society of Friends has ever been noted for its philanthropy, so that it does not surprise us to be told by Lady Butterworth that two-thirds of the members of the original committee of the Victoria Park Hospital were Quakers, as have been some members of its medical staff. Conspicuous among these latter was that kindly autocrat, Dr. Thomas Bevill Peacock, for many years, as Lady Butterworth says, "the guiding spirit of the Institution and almost its ruler," whose memory is perpetuated by the Peacock Ward. Dr. Peacock was also physician to St. Thomas's Hospital, where he died suddenly in 1882, while showing some friends round the building on the Embankment.

These facts and a quantity of others concerning the staff are to be found in an appendix, headed "Personal," which contains brief notes on the physicians and surgeons to the institutions—namely, Henry Jeaffreson, Guy Babington, Aston Key, Erichsen, Hilton, Risdon Bennett, Andrew Clark, James Andrew, Henry Gawen Sutton, and Lord Lister. Of the lay supporters the most outstanding name is that of Mr. Henry Edmund Gurney, who was chairman of the original meeting and treasurer for 18 years, until the failure of the great bank of Overend and Gurney brought him and many others to financial ruin. In Appendix V. a most interesting account of the historical associations of Bethnal Green and Victoria Park is given, for which most of the facts of antiquarian interest have been supplied, as we learn from a footnote, by Mr. A. Forbes Sieveking, the well-known antiquarian, whose father was the famous Sir Edward Sieveking. In 1848 the 200 acres of Victoria Park had recently been dedicated to the public before the neighbourhood had been built over, and when, indeed, it was suburban in character. Adjoining the boundary of the park was a triangular piece of ground of four acres, a part of Bonner's Fields, which the committee of the hospital leased from the Crown, and on which the hospital was built. The Bishops of London had long been connected with Bethnal Green, and Bishop Bonner, of heretic-burning notoriety, had his country house here. Tradition has for long asserted that a house in the neighbourhood of the hospital occupied the site of the palace of the "Blind Beggar of Bethnal Green," whose story is supported by tradition and the well-known ballad, but has no better basis. But Bethnal House, of which the position is indicated on the maps reproduced in this booklet, has an interesting history. Built in the reign of Queen Elizabeth as a country residence, Pepys tells us how he went to dinner there with Sir W. Rider, of his "merry walk with the ladies alone after dinner in the garden; the greatest quantity of strawberries I ever saw, and good." The house was afterwards for many years used as a lunatic asylum, and as Bethnal House it was well known, especially to students of the London Hospital, some of whom still living have studied psychiatry there. It was pulled down in 1921 and its site is now occupied by a public library.

This book is very attractive in appearance and illustrated by maps and photographs, and a facsimile of the scroll commemorating the laying of the first stone of the hospital in 1851. As a frontispiece it has a pleasing colour print of the hospital showing the main entrance and the balconies on the south wing. We cordially share the hope expressed by Sir Alexander K. Butterworth in the preface that its sale may be large and that the charity may benefit substantially thereby.

THE LANCET.

LONDON: SATURDAY, AUGUST 22, 1925.

MEDICAL SERVICES OF THE MINISTRY OF PENSIONS.

SUCH a war as that from which we emerged some five years ago has ploughed deep furrows into the social and moral conduct of the whole world. The story of the medical services of the Ministry of Pensions, which, as far as it covers that period, is set out by Dr. ALEXANDER SANDISON in THE LANCET this week, is illustrative of the tremendous energies that sprang into being in the days of trial, as of the ghastly situations that had to be faced; and we find the lessons to be drawn from the chronicle of events and from the results of remedial measures to be of good omen along all lines of national endeavour. For in respect of the care and amelioration of our sick and our wounded the objects of the Government, through its differently named ministries, have been attained in a very considerable manner. Aided no doubt by the passage of time and the forces of nature, the widespread alleviation of misery of our injured and disabled has been followed by sound remedial efforts; and in a country where this can take place over one great field of endeavour it is not too optimistic to suppose that similar lifting of post-war clouds will occur over other sections of national endeavour.

Those in charge of the men of our fighting or auxiliary forces throughout the war are now able to look back upon an immensely improved state of things. At the present time the conditions still requiring treatment on any extensive scale at the hands of the medical boards are tuberculosis, insanity and psychical manifestations, and certain general medical and surgical diseases of a chronic type. The victims of tropical diseases have almost disappeared from the lists, while the cardiac subjects have become much more tractable by classification, functional cases being separated from organic, and organic being themselves arranged in manageable categories. Insulin treatment, discovered since the cessation of hostilities, arrived in time to be used to the advantage of the diabetic subjects, while epileptics have been more accurately diagnosed with a view to appropriate treatment. But here, while the task of classification has been carried through successfully, the appropriate institutional accommodation remains to be found. The Ministry of Pensions has no establishment of its own for the colony treatment of epilepsy, and the existing colonies are full, with suitable applicants remaining outside. Here, and elsewhere, things remain to be done, but the whole statement of what has been accomplished shows good results, brought about by steady and unceasing work along intelligent lines; and brilliant as the assistance of specialists in every direction has been, it is particularly gratifying to the medical profession as a whole to know that the principles and problems of the diagnosis and treatment, in reference to the medical charges laid upon the country by the war, have been defined and solved, and the bases of pensions assessments arrived at, in accordance with the average medical opinion of the country. While whole-time officers were appointed to ensure adherence to needful standards and regulations, the claimants for pensions appeared before medical men, usually ex-Service men, whose judgments were arrived at on independent grounds.

During the war the primary object of all treatment was the splendid but horrible one of restoring the disabled man with the greatest rapidity to be an efficient unit in the fighting lines. As the war spread, so the boundaries of the contest came to include territories with a vast variety of diseases associated with their geography, which exacted an immense toll from the forces. Then science entered into hideous coöperation with nature and devised intense methods of warfare previously undreamt of, so that in a short space of time the number of men, whose disabilities obviously precluded them from ever again fighting, mounted up until they became a huge population. Their plight had to be met upon the immediate grounds of compassion and gratitude, and always with the reflection that their futures in civil life were to be secured as far as possible from dependency. At the end of the first year in the war it was clear to everybody that medical treatment must be provided in bulk along many special lines for the benefit of those to whom the nation owed the most poignant gratitude, and thus the Medical Services of the Ministry of Pensions developed out of the responsibility of the fighting Services for their suffering personnel. The Medical Boards, established in the first instance to decide on the physical fitness of recruits, were accordingly so coördinated that they could be adapted to deal with the claims of the seriously or permanently unfit men, and from these were developed the boards of the Ministry of Pensions. Dr. SANDISON'S account of the work of these boards is studiously short, but it conveys a vivid general impression of what has been done, and what remains for doing. The figures confirm the tale, showing graphically the steady rise and gradual decline in number of patients, and of institutions designed to meet their circumstances. While many specialised diseases have been appropriately dealt with, a great assortment of miscellaneous disabilities, chronic or recurring, still require special attention. The victims of bronchitis and rheumatism, for example, need greater facilities for institutional treatment at clinics or out-patient departments, and this is especially important because in such conditions the tendency is towards retrogression as time goes on, while it is often particularly important to cut short the development of sequelæ. Much yet remains to be done, but there is no doubt that under the Ministry of Pensions the medical profession as a whole have fought a hard fight strenuously and with fine results.

THE MALARIAL TREATMENT OF GENERAL PARALYSIS.

WE publish in this issue a review of Dr. GERSTMANN'S comprehensive account of the treatment of general paralysis by malarial inoculation. The good effects of fever on psychoses has been known certainly for 2000 years, but it was not until 1887 that Dr. WAGNER-JAUREGG, of the University of Vienna, turned his attention to the possibility of curing paralysis by artificially induced fever. He tried and discarded several methods before he decided on the subcutaneous injection of tertian malaria blood; erysipelas, tuberculin, dead streptococci, and proteids were all exhaustively tested. Dr. GERSTMANN gives a synoptic account of 400 cases (those of whom accurate after-histories had been kept) out of a total of 1000, and claims a very high percentage of complete recoveries—about 30 per

cent.—with a further 14 per cent. of partial recoveries in which the patients regained a fair measure of social capacity.

The British psychiatrist will want to know how far the malaria treatment has been tried in this country and with what outcome. It must be admitted that the results obtained here have been very disappointing. Dr. GERSTMANN says as much himself in his chapter on the results obtained by other authors, and on turning over the recent reports from a number of our larger mental hospitals (some of which are noted in this issue, p. 405), we find that only a dozen or so have tried the treatment on a few patients, with results so meagre as to be almost inconsiderable. Leicester reports that out of 23 patients 5 fully recovered, 3 were considerably improved, 3 died, and 12 were unaffected. At Chartham Downs one case has been discharged and several benefited, but the medical superintendent feels it is too early to express any definite opinion on the treatment. The one case treated at Barnwood is now free from any abnormal manifestations. Possible reasons for these scanty statistics are (1) this new unspecific treatment may be more likely to succeed in the clinic where it was invented and where everything possible is known about it than it is when adopted by strangers; (2) nowhere in Great Britain could anything like 1000 general paralytics come under treatment in the five years covered by Dr. GERSTMANN'S report; (3) British psychiatrists are still rather suspicious of a method so drastic and empirical and perhaps do not give it frequent trial. A correspondent in our columns this week suggests a milder form of irritant —namely, colloidal sulphur—which might certainly be tried. although the opinion of the original investigators is that the malarial parasite has some specific action. The Viennese experts admit having selected the more promising subjects from their great mass of material during the last two years, and would certainly avoid cases that through age, duration of the paresis, or intolerance of fever would be unlikely to profit by treatment. Certainly it is unfair to condemn a method that has only been tried here and there on batches of three or four patients taken at random. But whatever the reasons for our comparative failure, it would be a great pity if we allowed these results to deter us from testing the malarial treatment on a reasonably large scale. Desperate ills demand desperate remedies; there is very little danger in the treatment to patients of ordinary stamina, and so far no other means has been offered of countering one of the most distressing and hopeless illnesses of our age.

THE IRISH FREE STATE AND THE MEDICAL REGISTER.

THE announcement made on August 15th by the President of the Irish Free State, Mr. COSGRAVE, that the Executive Council of his Government had decided "not to seek the continuance of the United Kingdom arrangement, whereby the medical profession of Ireland, with certain representation, was controlled by the British General Medical Council," has been received with profound apprehension among the ranks as well as in the high places of Irish medicine. Three years ago there was in Ireland a body of medical opinion definitely in favour of the ultimate pronouncement of such a decision, while in our columns in 1922 our Dublin correspondent wrote as follows: "It is suitable that the Irish Government should take under its supervision the keeping of the medical register of Ireland, for it could hardly permit so important a matter to remain in the hands of a body which is departmentally subordinate to the English Privy Council." There is no doubt that our correspondent expressed the attitude of leaders of medicine in Dublin when he wrote, but the probability of a change of opinion was already foreseen. For three and a half years the Government of the Free State has been in communication with the General Medical Council on the matter, leaving the impression of hesitancy throughout, now seeming to regard the functioning of the Council in Ireland as interference, and now viewing it in the light of a useful protection. From the story of the position it will be clear that either view has reason behind it, while the holding of both views simultaneously seems due to that desire "to have it both ways" which is so commonly cherished and so seldom accomplished.

When the autonomous Free State was set up in January, 1922, it was, of course, realised by the medical profession of the State that their whole status might be affected. Those whose eyes were fixed more particularly on the dawn of national existence saw in the opportunity that was thus given to break away from the jurisdiction of the General Medical Council the beginnings of a new and presumably freer era. Others, again, less concerned perhaps with national statesmanship than with the field of medicine within the Empire, foresaw that separation from the British Medical Register, save under the conditions of a Dominion, might imply an economic tragedy for the ancient medical schools of the young Free State. The disaster might be only temporary, but it was difficult to dispute its probability. This latter view has grown to be the predominant, if not universal, one in the medical profession. Further, and apart from purely economic considerations, it is possible that not a few Irish medical men may have felt some damping of their hopes for the future of medicine in the Free State when none of the persons recommended by the Royal Colleges to the President of the Free State Executive as suitable for nomination to the Senate was selected by him for that dignity. At any rate, the change of heart appears to have become manifest soon after this rebuff. It was settled quite early in the history of negotiations between the Provisional Government of Ireland and the British Ministry of Health that the constitutional arrangements then in force as to the Medical Acts would continue unaltered unless and until the Parliament of the Irish Free State saw fit to legislate for practitioners within its own area. And so up to the beginning of 1924 the old way continued unchanged and undisturbed, nor was any voice of complaint uplifted; the understanding being, on the part of the Free State, that should they at any time desire to "cut the painter," they were at full liberty to do so. But following the Irish Free State (Consequential Adaptation of Enactments) Act of 1923, wherein no mention was made of the Medical Act continuing to be in force in the Free State, the General Medical Council indicated that the separation would occur unless the Free State Government explicitly stated that they wished the connexion to be preserved. This brought action from the Free State, and in July, 1924, a Bill was introduced authorising the General Medical Council to continue its jurisdiction for a period of one year. This Bill was passed by the Senate on Feb. 23rd, 1925, from which date it became effective, and the Free State Government was given the opportunity of extending the interim measure for further definite periods.

While professional fears were thus allayed for the moment, the licensing bodies and professional organisations in the State bestirred themselves to find a more stable basis for the future control, educational and disciplinary, of the medical profession in the country. At a conference held in April of this year between the Minister of Local Government and Public Health in the Free State, in whose department the matter lay, and representatives of the medical profession, it was unanimously urged that the existing status should not be disturbed, and that the Government of the Free State should exert itself to ensure that a common register for Great Britain and Ireland should be maintained as hitherto. Our Dublin correspondent says that the Minister agreed with the medical representatives, whom he invited to form a committee with which he might consult as occasion arose. No occasion had arisen before the decision was announced last week to establish a separate Medical Register for the Irish Free State.

Annotations.

"Ne quid nimis."

THE NATURE OF LIGHT.

WHAT life is to the biologist, so is radiation to the physicist, the quickening impulse that sets matter vibrating, not only matter but electricity, electrons, the electrical atoms. These are set vibrating by radiation, and in turn give out radiation and the two processes are linked in some obscure way. The nature of light is, of course, only part of the greater question of the nature of radiation, yet familiarity with the term induces the more frequent reference to it. Newton gave the first connected theory as to the nature of light. His amazing genius coupled experimental inventiveness with a surpassing imagination. The corpuscular theory which he imagined held its own against the undulatory theory for about a century and a half, until the work of another genius, scientist, doctor, and Egyptologist, Thomas Young, overthrew it by showing that two beams of light could, under certain circumstances, interfere with one another, and as it were, cancel each other's effects. There was no room for such a phenomenon in the theory that light consisted of minute corpuscles ejected from a luminous source. The wave theory of light then held the field for about a century, an enhanced prestige devolving upon it as a result of the work of still one more genius, Clerk Maxwell, whose electro-magnetic theory of radiation retained the conception of undulations, but replaced the mechanical basis of such action by one entirely electro-magnetic in nature. It is probably true to say that Maxwell's electro-magnetic theory of light was held to be true by physicists all over the world at the close of last century, just as the permanence of atoms was by chemists. The discoveries of X rays and radio-activity have modified both of these conceptions. On several occasions Sir J. J. Thomson has pointed out the difficulty of explaining certain phenomena on the wave theory of light, and he has now developed a new theory which attempts to reconcile the two opposing theories, the corpuscular and the undulatory.

It was a happy idea of the Fison Memorial Committee to institute a lectureship to commemorate the life and work of Dr. Alfred Henry Fison, who was associated with the work of the physics department of Guy's Hospital since 1906. The Committee invited our foremost British physicist to give the first of these lectures, and the subject was the Structure of Light. This has recently been published as a small brochure by the Cambridge University Press (2*s.* 6*d.*), the account of the lecture being preceded by an interesting and sympathetic account of the life and work of Fison, a man who endeared himself to mankind generally. Sir J. J. Thomson puts the difficulty of the position in a nutshell when he says: "In all forms of the undulatory theory of light the energy is supposed to be diffused throughout the whole of the space through which the light is passing, and not, as in the Newtonian theory, concentrated in small patches; it is this uniform distribution of energy which has proved the most serious difficulty in the way of the undulatory theory." This difficulty is, perhaps, shown more clearly in what is called gaseous ionisation. It is known that X rays eject electrons from bodies upon which they fall, and it is found that when X rays pass through a gas only a very small fraction of the molecules of the gas so lose electrons: it requires a long exposure to an intense beam of X rays to get one electron out of one molecule in a billion. This is not what we should expect to happen if X rays consist of waves whose energy is spread continuously through space. The same sort of thing happens with gamma rays or ultra-violet rays, but it is rather unusual to get this sort of electron emission by means of ordinary light. In his address on the Structure of Light, which will no doubt become one of the classics of scientific literature, Sir J. J. Thomson develops a theory which is, as he says, a combination of the two older theories. Light is to him partly corpuscular and partly undulatory, a sort of meshwork consisting of active centres on a ground-work of wave-motion. What of these active centres? Herein lies the most imaginative part of the theory, and we read: "The mental picture I draw of the light given out by an atom or molecule is that it consists of lines of electric force distributed in two ways. The distribution in one part which we may call the corpuscular and which corresponds to the quantum is, as I shall explain afterwards, an anchor-ring formed of closed lines of electric force; this ring moves forward at right angles to its plane with the velocity of light, and this movement does not change its size or shape. The anchor-ring can vibrate, the time of vibration being the time light takes to travel round the circumference of the ring; thus the frequency of its vibration is inversely proportional to its circumference. While it is ejected from the atom it is in vigorous vibration and starts a system of ordinary Maxwellian waves." Further details of this mechanism are elaborated in the text and may be left to the reader. Submitted to experimental test the new theory is likely to fare better than its predecessors, for it reconciles Newton with Young, while paying tribute to the imaginative insight of Faraday, Maxwell, Kelvin, and Rayleigh. Like peaks in a mountain range these names stand out supreme among the British physicists who have brought the study of radiation to its present summit.

ADENOIDS AMONG SCHOOL-CHILDREN.

IN reading Dr. H. P. Newsholme's report on the prevalence of adenoids among Croydon school-children, it is well to bear in mind that this disease, which now bulks so largely in the reports of school medical officers as a cause of widespread damage to health, was only discovered 40 years ago. Thus in the eighth edition of Erichsen's "Surgery," published in 1884, we read: "Meyer of Copenhagen has described a condition occasionally met with in strumous children, in which there is a general overgrowth of the closed lymphatic follicles situated about the posterior nares and upper part of the pharynx. It leads to more or less complete obstruction of the posterior nares, and is often accompanied by deafness." The Croydon inquiry was conducted in all the departments of 31 out of the 33 elementary schools, and the survey covered some 18,000 children, about 600 of whom had indications of definite adenoids.

Provision of treatment for these children by the Education Committee has altered the normal prevalence of adenoids, and, but for this, Dr. Newsholme estimates that 5 per cent. of the school-children

would be suffering from symptoms calling for operative interference, whereas under existing circumstances about 2 per cent. require it. This is a strikingly small percentage; Gradenigo found in Turin that adenoids were present in one out of every three children coming to his clinic, and Dan McKenzie estimates that over 30 per cent. of all children in Britain suffer from adenoids and require operation. The work of the throat clinic now makes adenoids most prominent in early school life, whereas, apart from surgical interference, this disease, high at the entrance age, would increase to a maximum at the age-group 9 to 11. At almost every age-period there is a clear excess among boys as compared with girls. Some 7 per cent. of boys and 6 per cent. of girls have, or have had, definite adenoids during school life. There is some evidence also that the disease reaches a given degree of severity somewhat later in school life among girls than among boys. A comparison between schools receiving children from the more prosperous and the poorer districts respectively suggests a greater prevalence among the latter. Thus 4995 scholars at six schools serving prosperous districts furnished 60 cases of severe adenoids, 47 cases of slight adenoids, and 128 cases which had been operated upon; whereas 4534 scholars in seven schools serving the poorer districts furnished 90 cases of severe adenoids, 69 of slighter adenoids, and 163 cases in which an operation had been performed during school life. There are no data available to check whether the smaller proportion of adenoids among the entrants to the "prosperous" schools is due to more ready recourse to operative treatment during the pre-school age. Among the "prosperous" children aged 5 years, numbering 237, there were seven cases of severe adenoids, three of slighter adenoids, and two where operation was performed during school life; whereas among the 245 "poorer" children aged 5 there were four cases of severe adenoids, thirteen of slighter adenoids, and six cases where operation was performed during school life.

An endeavour was made in the case of 156 unselected cases of well-marked adenoids to ascertain the date of onset. Where a definite history was obtainable from the parents, it was found that half of the cases who were mouth-breathers, one-third of those who were deaf, and one-quarter of those with enlarged tonsils had developed these defects before admission to school. The available data yielded no evidence of any relation between adenoids and bottle-feeding or prolonged breast-feeding, nor did they support the theory that the use of a comforter favoured the development of adenoids. No connexion could be traced between the sanitary condition of the home and the prevalence of adenoids, apart from the fact that the increased aggregation of persons per room appeared to have an influence. It was clear that adenoids cause a school child to lag behind his fellows in educational level, the effect becoming particularly serious in the upper standards of the school.

We hope that this portion of Dr. Newsholme's report will be widely circulated and lead to similar inquiries in other populous districts. One thing is abundantly clear, that we must not be content with moving the maximum incidence from the age of 10 to the age of 5, but that serious efforts will have to be made to tackle the toddler through the child welfare clinics so as to cut off the supply of damaged school entrants. Probably a considerable number of children, both of the poorer and more prosperous classes, have had their adenoids removed before entering school; but it is certain that many children still suffer because the operation has been delayed too long, and that a large proportion of cases of deafness and chronic otorrhœa, as well as of acute aural suppuration and mastoiditis, could be prevented by more timely removal of adenoids. Although some children first develop symptoms of adenoid hypertrophy later in life, the most suitable age for their removal is usually about 4 or 5 years, and in a considerable number of children the naso-pharyngeal tonsil is sufficiently enlarged to cause serious symptoms at a far earlier age than this. A test of the efficiency of the service would be the average age of the patients operated on; it would be interesting to have statistics on this point from some of our public clinics. Croydon should be in an ideal position to do this, as owing to the wise coöperation of the Health and Education Committees the child is supervised, as from September, 1924, by the same medical and health nurse staff from infancy to school-leaving age.

THE THERAPEUTIC USES OF SILICA.

IN this country silicic acid and the silicates are generally considered unsuitable for administration per os, although the sodium salt is used in powdered form in France. In a recent article in the *Wiener Klinische Wochenschrift* (No. 27, 1925) Prof. Friedrich Luithlen points out that silica is the foundation of the elasticity of living tissues and that healthy activity depends on the maintenance of a proper balance between the calcium and silica constituents of the body. In youth the silica content is at its highest, decreasing with maturity until in age there is a deficiency, with a corresponding preponderance of chalk. Hence the altered biological processes, the diminished pliability of the tissues, and the liability to fractures. Arguing from these facts, Prof. Luithlen has tried the use of silica in certain senile and other conditions attributable to silica deficiency. The best results have been obtained in cases of pruritus senilis where there is no definite metabolic cause for the irritation and the superficial layers of the epidermis are dry and brittle. In many instances where colloid treatment, hypotonic solutions, and organotherapy had been tried in vain, intravenous injections of silicic acid rendered the skin soft and supple and restored the circulation. Good results have also been obtained in all kinds of senile skin disorders such as psoriasis, furunculosis, and acute weeping eczema in the aged, as well as the further advantage of increased immunity and better conditions of life resulting from the restoration of chemical balance in the tissues. The method has also been applied with satisfactory results to cases of arterio-sclerosis, stenosis of the cardiac valves, and tuberculosis of the lungs. The drug may be administered hypodermically or per os in youthful cases where the power to re-absorb silica has not been lost. For this purpose a "silicic acid tea" or the organic preparations can be used. For older people it is best given intravenously, in the form of a 1 per cent. watery solution of sodium silicatum purissimum. The phials should be well shaken, as sedimentation is likely to take place, and 1 c.cm. may be given on alternate days up to 15 or 20 doses. If the claims of Prof. Luithlen are substantiated by further observations we shall have in silicic acid a most valuable therapeutic weapon against a series of trying and obstinate conditions.

CAVERNOUS OPTIC ATROPHY.

A THEORY of chronic glaucoma which is associated with the name of Schnabel holds that it is caused not by pressure on the optic nerve, but by primary atrophy of that structure. The theory was long ago discredited, but has lately been revived in a somewhat different form. Mr. Ransom Pickard [1] holds that "cavernous atrophy" is a distinct entity, that it has no necessary relation to glaucoma, but that in some cases the two conditions may be associated. According to this writer, "cavernous atrophy" is characterised by a cupping of the disc which may or may not extend to the margin all round, an absence of tension, which remains within normal limits, and retinal vessels of normal size. The persistence of a normal tension at once separates these cases from those of glaucoma. The fields for colour are characteristic. In ordinary glaucoma they are diminished in the same proportion as the field for white. In

[1] British Journal of Ophthalmology, August, 1925.

cavernous atrophy the colour fields, and especially the field for red, are diminished far more in proportion than the field for white. It follows that in cases suspected to be chronic glaucoma without any demonstrable rise of intra-ocular tension, the colour fields as well as the fields for white should always be carefully taken. From the point of view of prognosis the distinction between the two diseases is, according to the writer of the paper, most important. Several of his cases of "cavernous atrophy" were kept under observation for considerable periods—one case for 14 years—during which time very little progress in the disease took place, and it is his opinion that the case is typical. The subject is controversial and the number of cases from which Mr. Pickard's conclusions are reached is not large, but seeing that cases of cupped discs resembling glaucoma but with normal tension are by no means unknown, it should not be long before further evidence bearing on the subject is forthcoming.

THE PINEAL GLAND AS A LOCALISER.

RADIOLOGY may have found a use for the pineal gland. The fact that in about 50 per cent. of all skulls the pineal gland is calcified, and can be demonstrated by skiagraphy, has been utilised by Dr. H. C. Naffziger,[1] of San Francisco, for determining on which side of the brain a tumour is situated. In cerebral tumour the portion of brain affected increases in size and pushes to the opposite side the falx and all mid-line structures, including the pineal gland. This displacement of the gland is termed by Naffziger "the pineal shift." The amount of the displacement varies from 1 to 3 cm. A special X ray technique is described. The "pineal shift" occurs whether the tumour be frontal, parietal, or occipital. Lesions of the base, or of the posterior fossa (subtentorial) cause internal hydrocephalus, and both lateral ventricles being equally distended, no "pineal shift" occurs. The two essentials for this method of diagnosis are a calcified pineal gland and an increase in intracranial pressure. Displacement of the gland to the right of the mid-saggittal plane indicates a left-sided lesion and vice versa. In the presence of intracranial pressure a mid-line position of the gland indicates equal pressure on the two sides. In the chronic form of intracranial pressure, due to tumour or abscess, the medial position of the gland means internal hydrocephalus, which occurs in lesions of the posterior fossa and in distortion of the third and fourth ventricles. In 15 cases the X ray findings have been confirmed either by operation or autopsy.

SAMARITAN FUNDS AND SOCIAL SERVICE DEPARTMENTS.

REPORTS of the Samaritan funds and social service departments continue each year to provide valuable sociological material of which we do not yet take full advantage. In the report of St. Thomas's Hospital the almoner points out that coöperation between the medical, nursing, and sociological units of the hospital is steadily bearing fruit, and that this coöperation is in turn reacting on the patient. To quote from the report "a new spirit seems to be growing, a desire on the patient's part to be a shareholder, a partner in the fortunes of the hospital; those who contribute a weekly sum from their wages for its upkeep show a more unselfish interest and pride in the good of the whole institution than formerly." The report affords an indication of some of the changes which are taking place year by year in sociological conditions of the hospital patient. For example, a new problem is being raised at the moment in the after-care of the extremely baffling and almost hopeless cases of encephalitis lethargica, and the special departments are receiving patients who, before the war, would not have sought help from hospitals. The rheumatism clinic affords another instance of the value of sociological inquiry and after-care, and it is not too much to believe that this work may be partly responsible for the reduction in the number of cases of chorea which now require treatment in hospital. The ever-open door of the casualty department still continues to admit some of the most difficult cases for inquiry, and there is an illuminating passage in the report giving details of the variety of questions which may be presented by one day's casualty work. The almoner comments also on the tasks of daily occurrence which arise in connexion with the patients of no fixed abode who live by casual labour, and states that the number of these patients is tending to increase, a fact which is not surprising in view of the increasing amount of unemployment.

The report of Moorfields Eye Hospital discusses the value of the social service department as a clearing house and a means of putting patients in touch with the various organisations which deal with the blind. Throughout England the Blind Association has visitors who are in communication with their central office, and the social service department of the hospital is thus enabled to coöperate effectively. Patients are frequently ignorant of the provision which has been made for them in various ways by the public authorities, and not the least of the almoner's duties is to help the patient to understand and apply to himself those particular laws and regulations relating to social welfare which have been made for his assistance and not from a desire to interfere with his liberty.

In the report of the Victoria Park Hospital almoner's department emphasis is laid on the housing question. There is little doubt that this outstanding problem remains the chief difficulty in all tuberculosis work. "Patient after patient tells the same tale of ill-health due to being forced to live in over-crowded insanitary houses, and often out-patient treatment in such conditions seems time thrown away." The almoner can only hope to assist certain individuals by repeatedly calling the attention of the appropriate authorities to particularly bad instances. Moreover, the housing problem has a bearing on after-care, which is an important feature of the work in an institution where the question of the return of a tuberculous patient to his own environment is an ever-present difficulty.

The report of Westminster Hospital emphasises similar difficulties. Bad housing again presents one of the greatest hindrances to effective effort; it is almost incredible that in twentieth century England there should be cases of five persons living in one room. The "down and outs," especially among the male patients, also continue to give anxiety. In the case of the older men this may be an unsolvable problem, but in the younger—frequently boys who have wandered to London from the farthest corners of England—some solution should be forthcoming, for it seems impossible to ask the hospital to shoulder the whole burden just because these lads happen to have fallen sick.

The almoner of the Brompton Hospital points out that the coöperation of the social service department of a chest hospital with the medical staff falls largely into two categories—preventive and alleviative; the latter operating indirectly in enabling the patient to obtain and benefit by such means of treatment as are indicated by the physician or surgeon. How wide a field these categories cover may to some extent be imagined when it is realised that patients are taken from all over the British Isles and often from outside them, and that the "coöperation" needed through the social worker may consist of anything from a grant of a daily pint of milk for a few weeks to the removal of a whole family with their Lares et Penates from an East End slum to a Sussex hamlet where house and work have first been found; or again from providing instruction in embroidery to a boy with congenital heart disease, to turning an indolent wife into the family bread-winner. At this hospital the whole ground is covered by the social service department, which deals separately with in-patients, out-patients, and those at the hospital's sanatorium at Frimley. With the latter,

[1] Surgery, Gynecology, and Obstetrics, April, 1925, p. 481.

every effort is made to keep in touch for an unlimited time, the after-histories thus obtained providing not only opportunities to lend a helping hand, but also a mass of information which has proved extremely useful in various investigations into the results and value of sanatorium treatment. The patients, with few exceptions, respond gladly to requests for yearly reports. All the sanatorium patients are interviewed on their admission by the almoner, who also visits Frimley once a fortnight and makes it her business to smooth away the home and financial difficulties which would otherwise necessitate self discharges before the maximum benefit had been obtained from treatment. A special effort is made to minimise the strain of readjustment to economic and social conditions on discharge. Other inquiries into after-histories are undertaken at the request of members of the visiting medical staff, in which work there would seem to be great latent possibilities. On the preventive side a point is made of arranging prolonged convalescent treatment for debilitated children, especially where there is a family history of tuberculosis or when the children are contacts of definite cases. The hospital possesses, through the generosity of friends, two open-air huts at a convalescent home at Hayling Island, and it is hoped to add to their number in the future. Arrested cases of pulmonary tuberculosis are often boarded out to prevent breakdown.

Even a brief perusal of some of the reports of hospital almoners' departments brings out therefore the outstanding fact that inquiry and after-care are enabling the medical staff to get the treatment recommended carried out.

THE birth-rate of England and Wales for the second quarter of the present year is only 19·4 per 1000, equalling the lowest record of any second quarter of any year excepting during part of the war period. The death-rate for the same quarter is only 11·7, the London death-rate being still lower, and standing at 10·1.

SIR JOHN MACALISTER MEMORIAL FUND.

THE second list of subscribers to the Fund opened by the Council of the Royal Society of Medicine to commemorate the 38 years of service of Sir John MacAlister as Secretary is as follows:—

Dr. W. Seaman Bainbridge, Dr. A. J. Ballantyne, Mr. A. S. Blundell Bankart, Dr. H. W. Barber, Surg.-Comdr. K. Digby Bell, Dr. H. Beckett-Overy, Dr. Arthur F. Blagg, Dr. Thos. William Blake, Dr. P. Brooke Bland, Dr. C. Hubert Bond, Dr. Helen Boyle, Mr. Henry Briggs.

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Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXXVI.—TREATMENT OF FLATULENCE.

II.*—INTESTINAL FLATULENCE.

INTESTINAL flatulence gives rise to a sensation of fullness or colicky pain in the abdomen which is due to the presence of gas under tension and is relieved by its expulsion. At times the frequent passage of flatus itself may cause considerable inconvenience. Though the discomfort is felt mainly in the lower abdomen, gas occasionally accumulates at the splenic flexure in such quantity that it may be mistaken for gastric flatulence and an attempt made to relieve it by eructation. If the flatulence be gastric in origin, relief will follow, but if intestinal, there will be increasing discomfort from aerophagy. The differential diagnosis may be readily confirmed by X ray examination.

The intestinal gases arise from two main sources: air swallowed with the food and saliva, and gas evolved from the bacterial decomposition of carbohydrates and proteins. Whilst, under normal conditions, either a small quantity of gas only is formed or a large quantity absorbed so that the amount passing out with the fæces is small, flatulence may occur under the following conditions: 1. Increased formation of gas by (*a*) excessive aerophagy, (*b*) decomposition of carbohydrates and proteins. 2. Deficient absorption of gas. 3. As a result of obstruction. 4. As a result of increased peristalsis.

Increased Production of Gas.

(*a*) Excessive aerophagy may result in intestinal flatulence and the passage of large quantities of odourless flatus.

(*b*) Although a rare occurrence in the stomach, the fermentation of carbohydrates and to a much smaller extent the putrefaction of proteins are common causes of intestinal flatulence. These conditions, though favoured to some extent by constipation, are more usually associated with diarrhœa, and have their origins in a variety of causes of which the following are the most important: (1) Dietetic excesses. The ingestion of large quantities of carbohydrate or protein will tend to produce fermentation and putrefaction from the residue which escapes digestion and absorption. The flatulence which results from the high cellulose dietary often given in habitual constipation is an example of this. (2) Deficiency in digestive ferments in the upper alimentary tract. The absence of hydrochloric acid in the various forms of achylia gastrica, and diseases of the pancreas leading to deficiency of its external secretion, will promote conditions favourable to intestinal decomposition. (3) Intestinal infections, whether as a result of infection from the food, from oral or naso-pharyngeal sepsis, or more rarely from chronic appendicitis, may lead to a condition of catarrhal entero-colitis, and by producing intestinal hurry will tend to prevent normal digestion and absorption and lead to fermentation and putrefaction.

Treatment.—The successful treatment of intestinal decomposition depends on the removal of the primary cause and the recognition of the associated disturbance of intestinal function. The stools are often characteristic; in fermentative cases they tend to be acid in reaction, frothy, somewhat sour-smelling, and microscopically show undigested starch granules, whereas in protein putrefaction they are alkaline, have a putrid odour, and microscopically show undigested meat fibre and an excess of Gram-positive organisms.

* An article on Gastric Flatulence appeared in this series last week.

A full consideration of the treatment of these types of diarrhœa is outside the scope of this article, which is concerned with one symptom only—namely, flatulence. This may or may not be of importance, but its efficient control will depend on (*a*) regulation of the diet, and (*b*) use of drugs.

(*a*) *Regulation of the Diet.*—As a means of controlling fermentation and putrefaction much greater reliance can be placed on suitable dietetic modifications than on the exhibition of the so-called intestinal antiseptics which are at best very uncertain in their results.

In *carbohydrate fermentation* the chief source of the flatulence is marsh gas derived from the break-down of cellulose. Green vegetables and uncooked fruits must, therefore, be strictly forbidden, and in some cases the total exclusion of carbohydrates from the dietary may be necessary. Generally, however, sugar, malted foods, milk, purée of potato and celery may be allowed in moderation. Cammidge[1] gives the following diet table for intestinal flatulence:—

The patient may have: White meat, lean red meat, sweetbread, tripe, calves' head, chicken, pheasant, partridge, tongue, lightly boiled or poached eggs, fresh butter, a little sweet cream, toast or old bread, crusts, wholemeal bread, light farinaceous food with fruit juices, spinach, celery, asparagus, a little potato, unsweetened stewed apples or plums, raw apples not too sour, almonds, Brazil nuts, cocoa essence, meat extracts. One ounce of whisky in four ounces of hot water with two meals.

The patient must avoid: Green vegetables (especially cabbage, radishes, peas, beans, lentils, salads), pears, raw plums, mayonnaise, oily or greasy foods, milk, cheese, excess of sweets, pastry, fresh bread, pork, veal, venison, sausages, hare, goose, duck, pigeon, curries, re-cooked meats, smoked fish, eels, salmon, herrings, mackerel, tea, coffee, wine, malt liquors, soup, broth.

In very intractable cases a diet of cooked minced meat and water, the well-known Salisbury cure, may be tried, but it is very irksome and should be limited to a period of six weeks.

In *protein putrefaction* a strict lacto-vegetarian diet is more suitable at first. Chicken, game, and fish may be added later, but mutton, beef, and veal should be withheld for some time after the diarrhœa has ceased. Sour milk is worth a trial in these cases with the object of replacing an abnormal intestinal flora with one inimical to putrefaction. The milk should be sterilised by boiling and then allowed to cool to a temperature of 120° F. A fresh culture of the *Bacillus bulgaricus* (tablets are too uncertain in their action to be reliable) is then added to the milk in a thermos flask and the whole incubated for 18 hours. It is then ready for use and may be taken in quantities starting with half a pint a day and gradually increasing until one and a half pints a day are taken. Better results are claimed by certain American writers, Rettger and Cheplin[2] and Kopeloff[3] by the use of the *Bacillus acidophilus* as the souring agent. They use at least 1000 c.cm. of the freshly inoculated milk and combine it with the administration of lactose, which promotes the growth of the bacilli. The method does not appear to have received an extended trial in this country and there are technical difficulties in the way of its general adoption.

(*b*) *Use of Drugs.*—Drugs are administered with three objects, to aid digestion, to control bacterial decomposition, and to relieve flatulence. In cases associated with achylia hydrochloric acid should be given in the full doses recommended by Hurst, not less than 1 drachm of the dilute acid in a tumbler of water flavoured with orange being sipped during and for a short time after each meal. In pancreatic deficiency various preparations such as pankreon, holadin, and taka-diastase may be tried after meals, but are not very satisfactory. Intestinal antiseptics for the control of putrefaction and fermentation are legion, but the evidence of their value is somewhat unconvincing as a satisfactory clinical assay is well-nigh impossible. The best appear to be calomel, especially in divided doses, benzo-naphthol (10 to 15 gr. t.i.d. in tabloid or in cachet), and dimol (2 to 4 gr. t.i.d. after meals). Colloidal kaolin is an efficient absorbent of bacterial toxins and may be given in half-ounce doses in water t.i.d. For the immediate relief of flatulence the essential oils are distinctly valuable, the best perhaps being oil of cajuput (minims 2 on a lump of sugar) and oil of turpentine (minims 15 in capsules or cachets). A tablespoonful of charcoal taken once or twice daily is also useful and helps to render the flatus odourless.

[1] Cammidge, P. J.: Fæces of Adults and Children, 1914.
[2] Rettger, L. F., and Cheplin, H. A.: Arch. Int. Med., xxix., 1922, 357.
[3] Kopeloff, N.: Arch. Int. Med., xxxiii., 1924, 47.

Deficient Absorption of Gas.

As in the case of gastric flatulence, this occurs but rarely, and then as a result of chronic venous congestion in heart failure and hepatic cirrhosis. The main lines of treatment have been sufficiently indicated in the previous article in THE LANCET. Inflammatory conditions of the colon may also interfere with the normal absorption of gases and account, in part at least, for the flatulence complained of in these cases.

As a Result of Obstruction.

Flatulence may occur as a result of organic obstruction or in cases of constipation when the intestine contracts on a fæcal mass and thus imprisons flatus. Treatment is directed to the relief of the obstruction.

As a Result of Increase of Peristalsis.

Apart from the causes already discussed, great inconvenience and distress may be caused by the frequent passage of flatus from causes purely emotional. The condition is analogous to nervous diarrhœa and is liable to be a very distressing symptom in moments of great mental strain. Diet is ineffectual in cases of this type unless, as sometimes happens, there is an associated intestinal catarrh, and treatment should be directed towards lessening the excitability of the gastro-colic reflex by a full dose of bromides combined with belladonna given at a suitable interval before the symptom is liable to occur.

Acute Flatulence or Meteorism.

Acute gaseous distension of the intestines occurs in certain severe abdominal conditions such as intestinal obstruction, acute general peritonitis, and acute pancreatitis. It is met with also as an important complication in certain infective fevers, notably enterica and pneumonia.

Treatment.—Acute abdominal conditions require surgical treatment, but in the absence of intestinal obstruction, or following its relief, the general principles of the treatment of meteorism are applicable to all cases. All food should be withheld with the exception of small quantities of whey and albumin water. Local applications to the abdomen such as turpentine stupes or hot fomentations are valuable, particularly for the relief of pain. Enemata of turpentine (½ to 2 drachms to a pint of soapy water) should be given and oil of turpentine, 15 minims in capsules taken by mouth every three hours, is useful. In severe cases the hypodermic injection of pituitrin 1 c.cm., or eserine 1/50th gr., may be tried in the absence of obstruction. The danger of perforation in typhoid should be remembered and these powerful drugs used with great caution, and only as an extreme measure.

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GOVERNMENT LUNCHEON TO STATISTICIANS.—The medical statisticians visiting this country under the auspices of the League of Nations were entertained to luncheon by His Majesty's Government on August 13th. Sir Kingsley Wood presided and extended a very hearty welcome to the visitors. Among the prominent medical men invited to meet the statisticians were Sir Humphry Rolleston, Sir Arthur Newsholme, Dr. H. Robinson, Lieut.-Colonel W. Butler, Dr. Percy Stocks, Dr. J. Brownlee, Dr. Norman White, Dr. J. C. McVail, and Dr. J. Fenton.

Special Articles.

THE MEDICAL SERVICES OF THE MINISTRY OF PENSIONS.

BY ALEX. SANDISON, M.B., B.C. CAMB., B.SC. LOND.,
A PRINCIPAL MEDICAL OFFICER OF THE MINISTRY OF PENSIONS.

THE PRIMARY OBJECT.

THE primary object of army medical treatment was the speedy restoration of the disabled man to be an efficient unit in the fighting or auxiliary services. As the war widened in scope and intensity the number of seriously and permanently disabled men became so large that attention had soon to be directed to the problem of their future in civil life. Thus, early in the war, there was need to consider the provision of medical treatment to those who were never likely to return to the forces but for whom the nation began to realise a peculiar responsibility. The restoration of their capacity for civil employment, or failing that the provision of the medical care necessitated by their permanently disabled condition, became a function of the State. Thereafter the medical services of the Ministry of Pensions developed out of the existing but limited responsibilities of the fighting services for the discharged disabled man.

Attributability, Aggravation, and Entitlement.

To medical science the war was as revolutionary an experience as it was to the science of warfare. Fresh problems of diagnosis, treatment, and administration arose on a scale previously unknown. Surgeons had to deal with appalling complexities in septic wounds, physicians were faced with an influx of tropical diseases, and with the novel sequelæ of "gas" and "shell-shock," administrators had to evolve hospital accommodation on a gigantic scale. Latterly there was imposed a new responsibility, novel in principle to normal medical practice, that of determining to what extent the total disabilities of the disabled soldier were due to the stress and shocks of war, and how far, therefore, the State could admit responsibility for them. The word "entitlement" took on a new and technical meaning and with it were joined "attributability" and "aggravation," a trinity of mighty import. "Entitlement" was the foundation-stone on which the structure of the Ministry must rest. Its implications, as defined in the Royal Warrants, depended upon the existence of medical unfitness consequent upon service with the forces. The fundamental decision in entitlement is, therefore, a matter of medical judgment—namely, the confirmation or otherwise of an alleged physical impairment.

ESTABLISHMENT OF MEDICAL BOARDS.

The medical boards established to decide on the physical fitness of individuals for military service were eventually, as part of the Ministry of National Service, so coördinated that they could readily be adapted to deal with the claims of unfit men. From them developed the boards of the Ministry of Pensions with the accessory service of the assessors.

In the Ministry of National Service boards the members of the board were general medical practitioners (assisted as required by specialists) working on a sessional part-time basis, so that the judgments of the boards were unfettered and not open to an accusation of bureaucracy. This principle was maintained in the boards of the Ministry of Pensions. The claimant for pension thus appeared before doctors, usually ex-Service men themselves, whose medical judgment was subservient to no over-riding authority, medical or lay. To function with equity and uniformity, however, the boards required guidance. Whole-time medical officers were, therefore, appointed to coördinate and advise the boards and to ensure an adherence to the technical regulations inseparable from the administration of a large organisation deriving its authority from specific warrants and Acts.

Average Medical Opinion of Country as Basis of Assessment.

Arising directly from a decision that a particular disability was consequent upon war service came the question of the degree of disablement caused thereby. Questions of this kind were new to the majority of the profession. Such assessment, moreover, is by no means easy and affords opportunity for considerable legitimate divergence of opinion. The experience of former wars gave only limited assistance and it was necessary to consider the whole problem largely de novo. Appropriate guidance was therefore given as to the principles on which assessment must be based, with indications of what might be considered an equitable range of assessment for the main types of disabilities and their complications. Except for the assessments fixed by the schedule of the Royal Warrant, these suggestions were based on a standardisation of the assessments which were being made throughout the country by the boards themselves. Thus the main basis of assessment was the average of the general medical opinion of the country. To secure uniformity and equity a special branch of whole-time medical officers, the assessors, was formed to oversee the assessments and discuss with individual boards any instances where their assessments and verdicts on entitlement were out of harmony with that which experience had shown to be appropriate, the final decision, however, resting with the board.

The final development of the boarding and assessing medical services thus resulted in a harmonious combination of the medical experience of the independent general practitioner, the specialist, and the administrator. On the one hand the pensioner was assured of the primary consideration of his case by independent medical men, and on the other of general uniformity and equity of treatment.

Ministry of Pensions Disability Committee.

The Minister, in 1919, appointed the Ministry of Pensions, Disability Committee. This Committee had as its members the Presidents of the Royal Colleges of Physicians and Surgeons, the secretary of the Medical Research Council, and other eminent medical men, who, with the Director-General of Medical Services as chairman and in conjunction with senior officials of the Ministry, medical and lay, considered in detail the medical aspect of the existing principles and regulations. The Committee, with its specialist subcommittees, held frequent meetings throughout 1920, 1921, and 1922. As the outcome of its labours the practice of the Ministry in entitlement and assessment became based upon the highest medical authority. The Committee remains in being and is available when required for consultation on medical problems.

The boards, initiated to deal with applicants for pensions, are now chiefly concerned with renewals and reassessments, although there still occur a considerable number of fresh applications—e.g., for the year ending March 31st, 1924, Article 9 claims averaged 600 a week, and for the year ending March 31st, 1925, there were 23,846 Article 9 boards, of which 730 were for officers. Their work in renewal and reassessment has been further added to by the institution of special boards for final awards. Further, it was inevitable that appeals should be made for reconsideration of the findings of the boards, and in October, 1919, appeal boards were constituted. Their constitution and procedure were on similar lines to the primary boards. It is remarkable that since their commencement the number of claims to these appeal boards has maintained a steady average of but 5 to 7 per cent. of the total cases boarded and that about 60 per cent. of these appeals have resulted in a confirmation of the original finding.

So small a proportion of appeals is a good indication of the efficiency with which the primary boarding and assessing procedure has been conducted.

The magnitude of the boarding work since its commencement is at once apparent in the figures given in Table I.

TABLE I.—*Medical Board Examinations.*

A = Officers. B = Other ranks.

Financial year.	Resurveys.		Appeals.		Final awards.	
	A.	B.	A.	B.	A.	B.
1919–20	29,380	1,009,525	No record	12,197	Not in operation.	
1920–21	47,028	1,120,578	3,668	67,664	"	"
1921–22	31,951	791,165	2,244	42,516	"	"
1922–23	22,840	346,049	2,050	26,372	2,101	196,519
1923–24	12,575	100,659	1,521	12,746	10,210	319,844
1924–25	3,840	47,227	741	8,922	15,268	212,014

Treatment.

The pensioner having received entitlement and assessment often required medical treatment, but prior to March, 1917, little provision for this had been made. Military hospitals were available if the pensioner liked to apply, but otherwise nothing very definite was done. Article 6 of the Royal Warrant and Order of Council of 1917 completely changed the situation, for, as stated in the Minister's first annual report, "its terms are wide enough to allow of the use of all forms of medical treatment," and "by it the entire direction of medical treatment of discharged men came under the control of the Ministry." From August, 1917, full use was made of these powers.

The facilities immediately available for treatment were military and civil hospitals, but the existing demand on these institutions by men still on the active list and the increasing number of pensioners suffering from special disabilities necessitated the securing of institutions to be controlled by or on behalf of the Ministry itself. The treatment needs of the Ministry increased at a rapid rate, especially on general demobilisation. Table II. shows the development of treatment.

TABLE II.

Date.	Total under treatment.			Special institutions for treatment of war disabilities.
	Institutional.	Otherwise.	Total.	
3/4/1918	10,743	1,824	12,567	—
31/3/1919	35,948	26,605	62,553	46
31/3/1920	24,007	128,629	152,636	72
31/3/1921	26,342	122,476	148,818	113
31/3/1922	28,894	105,600	119,494	95
31/3/1923	18,402	50,788	69,190	73
31/3/1924	15,046	37,719	51,675	79
31/3/1925	10,681	28,991	40,672	70

These figures do not include cases of insanity (about a constant 6000) nor officers and nurses. A detailed analysis of these figures is given below (Table II.A).

PROBLEMS AND PRINCIPLES OF DIAGNOSIS AND TREATMENT.

The problems of diagnosis and treatment were specialised and numerous. The limbless needed limbs, face wounds required plastic surgery, "shell-shocks" demanded a remedy for their multifarious complexes and complications. The insane needed mental institutions and the tuberculous sanatoriums. Men from the East brought with them malaria, dysentery, and bilharziasis. The blind sought training, the paraplegic a home. Trench fever and D.A.H. abounded. The situation was without precedent and analogies were few. Doctors, whether clinicians or administrators, found themselves launched on a little-charted sea.

Guiding principles soon emerged, and before considering in any detail the special forms of treatment provided, it is desirable to outline the course of the provisions of treatment as a whole.

The main divisions of treatment were and are: (1) in-patient, (2) out-patient, and (3) home. Accessory to these came a combination of treatment and training, and the special requirements of limb-fitting.

The use of civil hospitals for in-patient treatment was often handicapped by the difficulty of maintaining effective coördination, and of obtaining regular reports, together with at times a lack of facilities for dealing with the specialised diseases of pensioners. The Ministry therefore, though making extensive use of civil hospitals at the same time, found it necessary to establish institutions of its own. Thus the Ministry has itself been able to develop new methods of treatment, to keep in continuous touch with the progress of the pensioner, and to maintain an adequate provision of the essential forms of treatment required. Out-patient treatment has followed the same general lines and Ministry clinics have come to form the effective basis of such treatment. Home treatment, however, naturally blended with the existing provisions for the treatment of insured persons, and has been in the hands of the local general practitioner, assisted as required by the specialist facilities at the Ministry's disposal.

Such have been the general principles and procedure of treatment provision. The details are best considered according to the types of disability treated. At the present time the conditions still requiring treatment on an extensive scale are tuberculosis, insanity, psychasthenias, and general medical and surgical diseases of a chronic type. Tropical diseases have been almost extinguished. Cardiac diseases have been more precisely diagnosed, the functional being separated from the organic. Diabetics have been given full advantage of insulin treatment, epileptics have been more accurately diagnosed.

Thus the present problems and provision of treatment differ considerably in type and extent from those of 1920. Disease as a whole is characterised by an initial acute phase, followed by a period of subsidence of activity often complicated by expected or unexpected sequelæ, and finally terminating apart from death either in cure or in chronic disability of varying degree. The treatment requirements of the Ministry have necessarily followed this general rule. The acute phase has passed, activity has subsided, and the chief need of to-day is provision for the consequential and chronic terminal manifestations.

1. *Tuberculosis.*

Pensioners of non-commissioned army rank, with few exceptions, were of the "insured persons" class and thus were eligible for "sanatorium benefit." Their treatment for tuberculosis was therefore already provided for through the schemes of local health authorities under the general control of the Ministry of Health. Pensioners, however, have not only been given the full advantage of the existing tuberculosis schemes of local authorities, but in several directions these schemes have been supplemented by the Ministry itself. For example:—

(1) *Treatment for Officers and Nurses.*—Arrangements have been made with sanatoriums at Matlock, Woking, Midhurst, and elsewhere for special accommodation. At Matlock and Nayland sanatoriums provision has been made for vocational training.

(2) *Surgical Tuberculosis.*—The facilities for institutional treatment for adult surgical tuberculosis under local tuberculosis schemes are somewhat limited. The Ministry has, therefore, concentrated many such cases at its own hospital at Orpington where facilities for light treatment have recently been installed and the services of specialist surgeons secured.

(3) *Observation.*—To secure accuracy in the diagnosis of tuberculosis, wards have been set apart in Ministry hospitals throughout the country for the purpose of observation by specialist Ministry medical officers, using the latest methods of diagnosis. Until recently a total of some 200 beds were so occupied, but the need for such observation is now rapidly

TABLE IIA.

TREATMENT STATISTICS, 1918–1925.

1. *Under Treatment (Other Ranks).*

Date.		*Wounds and injuries.*	*Neurasthenia.*	*Paraplegic.*	*Epilepsy.*	*Tuberculosis.*	*Others.*					
On 3/4/18		4,583	424	136	133	1,611	5,680					
„ 31/3/19		23,716	2,932	326	540	6,622	28,417					
		Orthopædic.					*Convalescent.*	*General Medical and Surgical.*	*Tropical diseases.*	*Treatment and training.*	*Aural.*	*Ophthalmic.*
„ 31/3/20	I.P.	3,796	2,467	231	308	5,002	2,040	9,331	722	2329	135	69
	O.P.	28,567 } 32,363	3,343 } 5,810	249 } 480	557 } 865	10,135 } 15,137	— } 2,040	45,050 } 54,381	6,305 } 7,027	270 } 2599	3517 } 3693	695 } 770
	H.T.										41	6
„ 31/3/21	I.P.	4,025	2,951	260	597	4,563	1,048	9,762	807	2329	135	69
	O.P.	24,580 } 28,605	6,975 } 9,926	231 } 491	544 } 1141	12,045 } 16,608	— } 1,048	41,498 } 51,260	19,862 } 20,669	270 } 2599	3517 } 3693	695 } 770
	H.T.										41	6
„ 31/3/22	I.P.	3,876	3,265	212	555	3,025	748	8,223	740	3250	135	49
	O.P.	18,796 } 22,672	7,717 } 10,982	175 } 387	559 } 1114	8,994 } 12,019	— } 748	31,583 } 39,806	14,906 } 15,646	4 } 3254	3328 } 3480	689 } 742
	H.T.										17	4
„ 31/3/23	I.P.	4,610	2,531	184	502	4,887	196	3,459	316	3340	135	69
	O.P.	13,127 } 18,447	4,367 } 7,126	85 } 288	316 } 896	5,620 } 14,387	— } 196	10,596 } 16,181	4,266 } 4,675	13 } 3353	3517 } 3693	695 } 770
	H.T.	710	228	19	78	3,880	—	2,126	93	—	41	6
„ 31/3/24	I.P.	3,067	2,216	172	442	2,416	80	3,060	264	3039	135	49
	O.P.	8,560 } 12,234	3,199 } 5,539	59 } 237	204 } 658	2,727 } 9,991	— } 80	7,060 } 12,090	1,822 } 2,156	— } 3039	3328 } 3480	689 } 742
	H.T.	607	124	6	12	4,848	—	1,970	70	—	17	4
„ 31/3/25	I.P.	2,422	2,149	255	387	2,061	50	2,565	178	467	92	55
	O.P.	6,239 } 9,305	2,448 } 4,676	55 } 312	206 } 600	2,029 } 8,845	— } 50	5,816 } 10,457	999 } 1,224	— } 467	2964 } 3068	605 } 668
	H.T.	644	79	2	7	4,755	—	2,076	47	—	12	8

2. *Discharges from Treatment (Other Ranks).*

		Wounds and injuries.					*Others.*					
Up to 3/4/18		4,231	603	29	48	1,889	4,327					
„ 31/3/19		26,474	3,589	306	721	8,969	29,734					
		Orthopædic.						*General Medical and Surgical.*				
Year ending: 31/3/20	I.P.	11,392	4,882	286	583	10,731	9,428	33,588	1,932	334	1239	632
	O.P.	31,297 } 42,689	3,577 } 8,459	266 } 552	481 } 1064	6,385 } 17,116	— } 9,428	57,400 } 90,988	4,174 } 6,106	43 } 377	8033 } 9492	1828 } 2600
	H.T.										220	140
Year ending: 31/3/21	I.P.	17,536	4,119	358	1051	13,058	10,113	49,244	5,560			
	O.P.	42,268 } 59,804	10,009 } 14,128	369 } 727	1051 } 2102	11,388 } 24,446	— } 10,113	88,235 } 137,479	20,541 } 26,101			
Year ending: 31/3/22	I.P.	16,806	7,517	334	1192	10,714	5,630	42,937	4,572	2847		
	O.P.	40,189 } 56,995	15,162 } 22,679	298 } 632	981 } 2173	11,508 } 22,222	— } 5,630	73,537 } 116,474	30,897 } 35,469	295 } 3142		
Year ending: 31/3/23	I.P.	25,434	6,598	262	1273	10,094	3,267	21,020	2,843	3989	1239	632
	O.P.	45,033 } 78,996	12,485 } 21,293	205 } 539	911 } 2541	10,313 } 27,460	— } 3,267	32,969 } 72,348	15,055 } 19,563	— } 3989	8033 } 9492	1828 } 2600
	H.T.	8,529	2,210	72	357	7,053	—	18,359	1,665	—	220	140
Year ending: 31/3/24	I.P.	19,128	5,381	188	1053	7,701	1,160	14,831	1,824	4144	986	490
	O.P.	32,615 } 57,621	8,663 } 15,220	104 } 325	561 } 1852	7,081 } 20,993	— } 1,160	1,852 } 28,185	7,217 } 9,870	— } 4144	4708 } 5818	1575 } 2148
	H.T.	5,778	1,176	33	238	6,211	—	11,502	829	—	124	83
Year ending: 31/3/25	I.P.	13,910	4,838	128	825	6,480	571	13,090	1,494	3666	935	403
	O.P.	22,623 } 41,804	6,619 } 12,651	52 } 198	240 } 1166	3,796 } 16,382	— } 571	12,969 } 37,179	3,776 } 6,089	— } 3666	3885 } 4945	1327 } 1809
	H.T.	5,271	1,194	18	101	6,106	—	11,120	819	—	125	79

Note.—Insanity (about 6000 at each period) and officers and nurses *not* included.

I.P. = In-patient. O.P. = Out-patient. H.T. = Home treatment. Prior to 31/3/22 Aural and Ophthalmic cases were included in "General Medical and Surgical."

decreasing. The work done has been unique in scale and comprehensiveness. A full account of it has been already published in THE LANCET, 1924, i., 1195.

(4) *Treatment Abroad.*—Certain institutions in Switzerland and on the Riviera have been inspected and approved for the treatment of tuberculosis when treatment abroad was deemed essential.

(5) *Special Forms of Treatment.*—(*a*) *Dreyer treatment* was given by arrangement with the Medical Research Council to surgical tuberculosis cases at Orpington and to pulmonary cases at Woking Sanatorium. (*b*) *Light.* The recent advances in treatment by artificial light are being fully utilised and developed.

(6) *Vocational Training.*—In conjunction with the Ministry of Health extensive provision was made for vocational training, and approximately 700 pensioners have completed satisfactorily their courses in various trades and occupations.

(7) *Special diet, overcoats,* and *blankets* have been supplied to cases for which they were specially requisite.

As regards tuberculosis the Ministry has thus fully carried out its responsibility to secure for the pensioner the full use of existing treatment facilities and to supplement them as and when required.

2. *Mental Diseases.*

Under the Lunacy Acts the responsibility for the care of the certified insane rests with local authorities, with the general supervision of the Board of Control. Early in its history the Ministry made arrangements whereby any stigma of pauperism attachable to the admission of a pensioner to a county or borough asylum was removed, and "Service patients," including all those whose mental disease could be associated with the war, were given defined privileges.

The next step was to establish further the liaison with the Board of Control and to secure the regular examination by Ministry specialists of pensioners in mental hospitals. Specialist medical inspectors were appointed to conduct a systematic visitation. The discharged man pensioned for mental disease is thus very carefully looked after and his interests secured. The establishment of mental hospitals for pensioners alone was fully considered, and, although it was not found practicable to make general provision of such hospitals, arrangements have been made with two institutions—the Old Manor, Salisbury, in the south, and Storthes Hall, West Riding, in the north—for the allocation of separate wings (150 and 290 beds respectively) for the exclusive use of "Service patients." The cases selected for admission thereto are those whose mental state allows them to appreciate the advantages of such special accommodation and the scheme has proved very successful. The Storthes Hall wing is under direct Ministry control.

Arrangements have also been made for the accommodation in Ministry hospitals of suitable cases discharged "on trial" from asylums so that the difficulties inherent in sudden change from asylum to ordinary civil life might be minimised.

3. *Neurasthenia.*

The word "neurasthenia" has been widely used to include a large variety of conditions ranging from genuine "shell-shock" ("commotio cerebri") to functional neurosis ("emotio cerebri") and including the minor degrees of neurosis associated with the ordinary ailments and difficulties of life. Cases of true mental deficiency and inherent inability to withstand ordinary stress and strain have also been grouped in this miscellaneous class. The sorting out of this conglomeration of disabilities required time and patience. Moreover, the more acute forms of war neurosis presented novelties of aspects for which at the outset the best form of treatment was a matter of argument and indeed largely empirical. When from the mass provisionally diagnosed as "neurasthenics" those had been weeded out in whom the neurosis was merely superimposed on some definite organic condition such as gunshot wounds, heart disease, or tuberculosis, there yet remained a very large number, broadly divisible as follows:—

(1) *Borderline Cases Verging on Certifiable Insanity.*—It was the aim of the Ministry to avoid certification as long as possible. No adequate provision for the treatment of such cases existed, though it was foreshadowed at Maudsley Hospital, and the Ministry therefore established special institutions of its own, both for officers and other ranks, where every method could be employed to cure the case, or, if cure was impossible, to postpone certification until it could by no means be avoided. Considerable success attended these efforts and the problem of the borderline case is now much less acute. To-day the hospital devoted to such cases is *Eycell* (400 beds), which now serves as the centre to which all such cases in "other ranks" are deflected. For officers, *Latchmere* (58 beds) serves a similar purpose.

(2) *True Neurasthenics.*—Numerous special hospitals and clinics were established to treat these cases, and arrangements were made for the training of doctors in the technique of psychotherapy. Psychotherapy by itself, however, in a considerable number of cases did not produce more than "alleviation," and the reputedly cured neurasthenic was very apt to relapse seriously so soon as he had to face for himself the full stress of life, especially when associated with unemployment or domestic worries. Neurasthenia, moreover, was a too easy refuge for the work-shy and pessimist. Substantial progress in diminishing the numbers of neurasthenics requiring treatment was attained by combining definite *occupational treatment* with psychotherapy. Workshops, with workshop officers, were attached to the neurasthenia hospitals and efforts were made to secure suitable employment for the pensioner on discharge. Prolonged clinic treatment was discouraged and the chronic case was brought into hospital for occupational treatment. These measures not only produced cures, but also enabled the specialists to identify more accurately the different types of neurasthenics and to separate out the mentally defective, the epileptic, and the man who was making the most of his disability. Specialist medical inspectors constantly visited the hospitals and aided in this classification.

The number of true neurasthenics still under treatment is now less, as is also the number of hospitals, beds, and clinics allocated to them. There still remains, however, a need for further "vetting" and final decision as to future treatment and pension in many cases.

(3) *Mental Defectives.*—The frequency of this type became very obvious in the progress of the eliminative processes described above. These cases failed to react effectively to any form of treatment and deteriorated on return to the unsheltered conditions of home life. Many caused and got into trouble by their generally irresponsible conduct and habits. Others, whilst proving tractable patients in an institution, had not the stamina to maintain them in home conditions. In short, it became apparent that the only adequate treatment was the provision of shelter from the stress of life, a shelter necessary both in the man's interests and in those of his family and associates.

In 1923 Saltash, no longer needed as a convalescent centre, was adapted as an institution for the reception of cases from groups (2) and (3) above, in whom experience had shown to exist a complete incapacity to maintain even relative normality save under institutional conditions. Occupational treatment was fully developed, and the scheme proved so successful and necessary that in 1924 Harrowby Camp, previously a general neurasthenia hospital, was transformed to the Saltash type. A total of 650 beds is now available for this type of case. This provision by the Ministry is unique and, indeed, epoch-making as a practical effort to deal with a problem which is a national one and not solely one affecting pensioners. The time is now approaching when, apart from institutions of the borderline and Saltash types, there will be no need of special neurasthenia hospitals, adequate accommodation being obtainable by the use of separate wards in general hospitals. The need for neurological clinics is also less, but there will remain for a long time the necessity for a limited number of such clinics.

A large proportion of neurasthenics have been eventually disposed of by transfer to treatment and training centres, such procedure consolidating the improvement produced by occupational treatment in hospital. The in-patient figures for past treatment indicate that there have been over 50,000 separate admissions for courses of in-patient treatment for "neurasthenia."

4. *Epilepsy.*

A primary difficulty has been accurate diagnosis. Many cases so labelled proved to be, in fact, suffering from other organic diseases or to be truly functional. Maghull Hospital (300 beds) has been largely devoted to the precise diagnosis of "epileptics," and following this appropriate treatment has been given. The

Ministry has, however, had no institution of its own for colony treatment of epilepsy, and the demands on existing colonies—e.g., Lingfield and Chalfont—have been so heavy as until recently to entail long waiting lists. The task of diagnosis has, however, now been largely concluded, and Maghull is being used to a greater extent for prolonged treatment as well as observation.

5. *Paraplegics.*

These unfortunate men require institutional treatment of a type as home-like as possible, and for this purpose various small institutions have been used, where every comfort is provided for the pensioner fated, probably, to spend the rest of his days in a paralysed condition. With the opening last year of the Star and Garter Hospital, Richmond, additional accommodation has become available.

6. *Organic Nerve Diseases.*

This term is used to include traumatic injuries of nerves as well as general nerve degenerations. Mention must be made of the surgical skill which has been expended on the suture of nerves followed by re-educative exercises and massage, in many cases with gratifying success.

7. *Facial Wounds.*

Perhaps in no department of war and post-war surgery have such amazing results been obtained as in the treatment of facial injuries. Men with jaws and face smashed to shapeless pulp have been re-created in human form. Infinite patience, the most delicate technique, and sheer genius for this special task were happily at the disposal of the Ministry in the services of its facial surgeons, and the special hospital at Sidcup is world-renowned for the work done under its auspices. Happily the need for such work is now slight, and the Sidcup hospital has changed in function. Since March, 1920, however, 2944 facial operations have been performed there, of which 1156 were specialised jaw and dental work. The value and wonder of this work cannot be expressed in words. It can only be fully appreciated by those who have actually seen the miracle performed, the building up of a human countenance out of a repulsive mass of flesh. For the patients themselves, doomed as they thought to mere existence, shunning the ways of men, their distorted lips and eyes unable to express their human emotions, it has meant rescue from a living death.

8. *Diabetes.*

In 1923 the value of insulin for this disease became well established. The Ministry at once arranged for its provision at Orpington to all suitable cases. In the promptitude and extent to which insulin was used the Ministry was well in the forefront. Between June, 1923, and April, 1925, 215 cases (30 officers, 185 other ranks) diagnosed diabetes were sent to Orpington, and 178 given insulin treatment; 23 were found to be suffering from a less severe though analogous condition, but for which insulin was unsuitable. In a large number of cases definite success has followed the treatment, symptoms have disappeared, and the pre-diabetic body-weight has been regained. Each man, before discharge, has been carefully educated in the technique of continuing insulin treatment at home under the care of his doctor and the doctor fully informed of the treatment already given.

In this, as in other directions, the Ministry medical services have secured promptly for the pensioner the full value of the latest medical research. A further example may be cited in the speedy and universal use by the Ministry of the recently developed technique in the estimation of nephritis.

9. *Tropical Diseases.*

In its early history the Ministry's medical services had to deal with very large numbers of malarias, dysenteries, and other tropical diseases. Malaria was treated by intensive methods and is now rarely met with in active form. Pioneer and successful work was done in the pathology and treatment of dysentery, though there is still need for allocation of about 140 beds in Ministry hospitals for the treatment of intractable chronic dysenterics.

Startling success followed the introduction of the treatment of bilharziasis by antimony tartrate. As far as war pensioners are concerned bilharziasis has been extinguished. Pensioners of former wars have also been treated with equal success. The present need for tropical disease treatment is now very slight—a testimony to the efficiency employed in dealing with them.

10. *Wounds and Injuries.*

Enormous numbers of these required treatment, and special surgical hospitals were required on an extensive scale.

Operative procedure has been supplemented by *massage* and *electrical treatment*, a special Ministry *massage service* being established in January, 1920, and speedily numbering 500 members. Specialised *gymnastic treatment* has been given and the X rays utilised in all their latest developments.

The treatment of *penetrating wounds of the skull and brain*, a branch of surgery peculiarly the province of the Ministry, has been greatly advanced and many cases have, through specialised operations, regained a surprising degree of physical and mental fitness.

Gunshot wounds of the chest, often with foreign bodies retained in the lung, have also been treated with surprising success. At Shepherd's Bush Hospital some 250 cases have been operated on with uniformly satisfactory results, and not a single fatality.

The serious and often novel disabling results of the persistent rain of high explosives during the war have thus been largely counteracted, and wounds of head and chest which in pre-war days would have been considered beyond surgical skill have been repaired and remedied to an unlooked-for extent. Certain wounds, apparently soundly healed, but with bullets or other foreign bodies unremoved, have, however, from time to time suddenly "flared" up into serious activity necessitating further surgical interference, sometimes to an extensive degree. The need for surgical beds has thus not diminished so speedily as had reasonably been expected, and there also still remains a considerable number of chronic surgical conditions of a type very resistant to treatment.

Linked closely with the primary treatment of wounds has been treatment combined with training in trades practicable for disabled men, and a large proportion of the wounded have been passed through the treatment and training centres or referred direct to the training centres of the Ministry of Labour.

The extent of the work of a special surgical hospital is shown in the fact that Shepherd's Bush Hospital from August 1st, 1919, to its closure in March, 1925, dealt with 22,641 other ranks and 771 officers as in-patients.

11. *Limbs and Appliances.*

"Go to the wars would you," says Boult in Shakespeare's *Pericles*, "where a man may serve seven years for the loss of a leg, and have not money enough in the end to buy him a wooden one?" The Great War limbless pensioner has been given not a wooden leg but the latest product of the artificial limb-maker's art and a duplicate as well. Witness these figures as to limbs and appliances (Table III.).

TABLE III.

Year ending March 31st.	Limbs supplied.		Repairs to limbs.
	Legs.	Arms.	
1920	15,621	3,456	12,556
1921	15,391	4,746	19,901
1922	9,469	3,937	26,616
1923	7,589	1,230	33,489
1924	9,255	1,201	31,438
1925	11,102	1,289	34,013

At the end of March, 1925, the Ministry was responsible for artificial limbs in 37,178 pensioners, of whom 1782 were officers. In the year ending March 31st, 1925, 18,470 pairs of *surgical boots* were issued, 1180 being first issues, and 18,847 pairs were repaired. Other *surgical appliances*—e.g., belts, trusses, spinal supports—were supplied in 16,053 cases, 3970 being first issues. *Artificial eyes* were fitted to 3389 pensioners and *spectacles* to 733, in many cases special types of eye or spectacle being necessary. Up to March 31st, 1925, 4873 *hand propelled tricycles* and *invalid chairs* had been issued.

The Ministry, by constant conference and experiment, has given the most careful and specialised attention to discovering a fully effective form of artificial limb and has provided the improved types of light metal limbs. Most leg amputations can now be fitted with an artificial limb weighing not more than 4–5 lb. in place of a previous average of about 7 lb. The mechanical facilities developed in the artificial arms supplied are surprisingly effective. Efficient arrangements have been made for the renewal and repair of artificial limbs, and limb-fitting centres have been so established that such renewal or repair is assured with a minimum of inconvenience to the pensioner.

12. *Cardiac Diseases.*

Here again precise diagnosis was urgently necessary to separate out cases with definite structural lesions from those with functional, non-structural (often neurasthenic) conditions. Eminent cardiac consultants gave their assistance in this process. The treatment of both types has been made more effective, especially by means of graduated physical exercises, and the majority of cardiac cases still under treatment are of the chronic and advanced class for which alleviation rather than remedy is alone possible.

13. *Other Special Conditions.*

Mention must be made of the extensive treatment facilities, in-patient and out-patient, provided for *eye and ear diseases*. Numerous courses of lip-reading for the deaf have been given, and for the blind a close association has been maintained with St. Dunstan's.

Dental defects attributable to war service or closely correlated with pensioned disabilities, such as gastritis and rheumatoid arthritis, have been extensively remedied. Five whole-time specialist dentists have been appointed to coördinate and supervise the work carried out by a large panel of practising dentists. By this supervision great economy and efficiency have been attained.

Convalescent homes have been utilised as required. For *rheumatic* conditions spa treatment has been fully employed in suitable cases.

14. *General Medical Disabilities.*

The more specialised diseases having been appropriately dealt with, there yet remains a medley of miscellaneous disabilities of a chronic or recurrent character, such as bronchitis, asthma, myalgia, and rheumatism, for which definite facilities for more than home treatment are still required at hospitals of a general type, at general clinics, and out-patient departments. These conditions by their nature will continue to require special attention, the more so through their tendency slowly to deteriorate from year to year, or to develop sequelæ demanding more urgent treatment.

15. *Treatment Combined with Training.*

The extensive provision of this has been already mentioned in reference to neurasthenia, tuberculosis, and surgical disabilities. The object was to meet the need of pensioners whose disabilities prevented them resuming their pre-war employment, and who required training in a new occupation concurrently with the treatment of their disabilities. Close liaison has been maintained with the Ministry of Labour. At the present time the work is nearly finished, only one Ministry centre (Rednal, Birmingham) remaining open. In the past five years, however, treatment and training has been provided to about 12,000 pensioners, and in addition about 5000 have been transferred direct to the training schemes of the Ministry of Labour. The courses provided have included engineering, carpentry and joinery, french polishing, upholstery, painting and decorating, tailoring, watch and clock repairing, market gardening, commercial subjects, &c. The results in general have been good, but the persistent congestion of the labour market has not made it easy for the disabled man, however well trained, to compete with the physically fit civilian. At one time 3300 beds were available in a total of five Ministry centres.

16. *Laboratory Investigations.*

Modern diagnosis and treatment rest on accurate pathological and bacteriological investigations. Pathological laboratories were established at various centres, but this work has been increasingly concentrated at the Ministry Laboratory in London (recently at Cheltenham-terrace, now at Bulinga-street). This central laboratory is as finely equipped as any in the country, and has performed an amount of work which measured by figures is enormous and in practical value inestimable. The medical staff there has kept in touch with all the latest research. Improvements in technique have been introduced and advances in knowledge made which entitle the Ministry to claim that its pathological services are second to none.

17. *Medical Stores and Supplies to Hospitals.*

Efficiency and economy have followed the conduct of these essential services by a special branch established in 1919.

18. *Nursing.*

With the development of Ministry hospitals a Ministry nursing service became necessary and was instituted in June, 1919, the staff at the end of that year numbering 28 matrons, 212 charge sisters, 268 nursing sisters, and 214 assistant nurses. The present staff is 30 matrons, 12 assistant matrons, 216 charge sisters, 298 nursing sisters, and 70 assistant nurses.

19. *Miscellaneous.*

Many accessory items in the general work deserve mention. The introduction and development of *record cards*, whereby a continuous account of the pensioner's medical history is made available for all directly concerned with his treatment or boarding; the grants of *constant attendance allowance* for blinded and other pensioners so seriously disabled as to be unable themselves to perform without aid the common functions of life; the arrangements with the *colonies* and with *consuls* in foreign countries for the provision of boarding and treatment facilities abroad as nearly equivalent as possible to those provided in this country.

20. *Officers and nurses* have been dealt with broadly on the same lines as "other ranks" except that separate institutional accommodation has been provided for them. A considerable number of officers' hospitals or officers' wards have thus been necessary, but at the present time only two Ministry hospitals (Rotherfield Court and Latchmere), both for neurasthenics, are solely devoted to officers, and one (The Spring, Hanwell) to nurses. As few officers come within the provisions of the Insurance Act the arrangements for their home treatment have been a direct concern of the Ministry involving much personal communication with doctors and officers. At the present time over 3000 officers and about 330 nurses are in receipt of treatment from the Ministry. The total other ranks now under treatment is approximately 47,000.

CONCLUSION.

Any condensed account of the work and scope of medical services inevitably resembles a catalogue embellished with statistics. A recital of facts and

figures can convey but a general impression of the work done and that yet to be accomplished. The war with its aftermath of sick and wounded was a direct challenge to medical science. The challenge was gladly taken up, and under the ægis of the Ministry of Pensions the clinicians, surgeons, and administrators of the profession have united to exercise and develop to the utmost the resources of their art. The victory has not rested with, but has been wrested from, disease.

I am indebted to Major the Rt. Hon. G. C. Tryon, M.P., Minister of Pensions, for permission to publish this article.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(*Continued from p. 350.*)

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.

(App. LXVII. and Q. 18437–18518.)

THIS Society submitted proposals for the inclusion of massage and electrical treatment as an additional benefit to be provided by approved societies, when prescribed by a medical practitioner, for persons insured under the National Health Insurance Scheme. Evidence was given by Sir Cooper Perry and Dr. James Mennell.

The rules of the Society provide that its members are not to undertake any cases of massage except under the direction of a registered medical practitioner; not to advertise except in recognised medical and nursing papers; not to sell goods to patients in a professional capacity, and not to accept secret commissions on the sale of goods. Over 5400 masseuses and masseurs are now registered with the Society, and the majority are qualified to administer, under medical directions, the treatments by massage, remedial exercises, and medical electricity now so generally ordered for a variety of medical and surgical conditions.

The certificates granted by the Society are recognised by Government departments and the medical profession generally. Written evidence of the value of the treatment, and the increasing recognition of it, was submitted from Mr. R. C. Elmslie, orthopædic surgeon to St. Bartholomew's Hospital, and from Sir Robert Jones, who said:—

> There are many conditions of which it must be said that physical treatment offers, if not the only hope of cure, at any rate, the only hope of saving prolonged and tedious convalescence. . . . It is not infrequently possible by the use of physical treatment to reduce the duration of disability by anything from a half to two-thirds, while at the same time rendering the liability to recurrence comparatively small.

The witnesses estimated that 2 per cent. of the insured population would require physical treatment annually—that is, 300,000—and the average cost per patient would be £5 10*s*. This would mean a total yearly expenditure of £1,650,000, or rather more than 2*s*. per head of the insured population.

Massage treatment would probably best be administered as part of a hospital service. There is, in any case, probably a higher percentage of insured persons receiving massage treatment in hospitals than at home from their panel doctors, mainly because the accident cases usually go to hospital. There is, however, more medical than fracture work amongst hospital cases, roughly two-thirds medical and one-third surgical.

Sir Cooper Perry agreed with Sir Humphry Rolleston's suggestion that there might be a progressive increase in the use of massage amongst the general population, so that the 2 per cent. estimate might prove to be a considerable underestimate in a few years' time.

IVORY CROSS.

(App. LXVIII. and Q. 18519–18657.)

The evidence on behalf of the Council of the Ivory Cross was submitted by Mr. Charles Davis, Mr. H. D. Grant, Mr. John Hale, and Miss A. E. Fletcher.

This Society began by providing dental treatment for soldiers and sailors, and then went on to pensions, but lately have been providing for the population at large. Their income varies from £5000 to £27,000 a year, and it is their practice to require patients who can afford to pay something towards the cost of treatment to do so, as they appreciate it so much more. About 25 per cent. get free treatment; about 6 per cent. give from 6*d*. to 10*s*.; about 10 per cent. give £1; about 30 per cent. give £2; and about 8½ per cent. give £3.

The witnesses said that they objected very strongly to clinics, and they try to provide that in the service, which is always given at a private surgery, there is no distinction between patients.

> (Q. 18643.) Taking your organisation, is there not a taint of charity about it?—There is in the name only, but not in the way the patient is treated. That is the whole secret of the Ivory Cross. The patient comes to me by appointment made by me to see me. He or she comes to my house. The maid who opens the door does not know that she is not a private patient. She enters my surgery. My nurse-secretary tells me who she is and produces her chart, and that is the first time that it is known that she is from the Ivory Cross. There is nobody outside my surgery knows, and she is treated in every way as a private patient. There is no question of charity thrust at her or thrown at her in any way.

The Society is in favour of dental benefit being made a statutory benefit available for all insured persons, if it can be done without creating a state of affairs disadvantageous to the profession. Payment, it was considered, must be on a case basis and not a capitation basis, and it was recognised that there would have to be a scaling down of bills as in the system of payment of panel doctors in force in Manchester and Salford.

SCOTTISH PANEL CHEMISTS.

(App. LXIX. and Q. 18658–18892.)

The General Council of Panel Chemists, Scotland, whose secretary, Mr. J. Rutherford Hill, gave evidence, is of opinion that medical benefit administration through insurance committees and under the panel system should be continued.

> Prescribing by panel practitioners in Scotland, as a whole is on a very high level, and the relationship between practitioners and pharmacists is one of mutual respect and confidence and helpful coöperation. The matters referred to as needing amendment are comparatively few and are mentioned with a view to their elimination, so that a service already on the whole satisfactory may be brought still nearer to the ultimate ideal. These remarks apply equally to the pharmaceutical service.

There is a difference in the way in which the drug tariff is prepared in Scotland as compared with England and Wales. In Scotland the chemist has a commercial profit on the drug supplied and a professional fee for dispensing it. In England the chemist gets the net wholesale cost of the drug plus a flat rate for establishment charges, plus a dispensing fee. Notwithstanding the lower tariff charge for each item in England the cost per head is greater than in Scotland. As an explanation of this Mr. Hill suggested:—

> (Q. 18729.) As a rule the medicines are more concentrated. The dosage is small, and where a bottle of medicine

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

would require to be repeated probably three or four times in England, one bottle would do for that patient under the Scottish system.

Mr. Hill said that from the beginning there has in practice been ample freedom in the choice of medicines, and it has never been suggested or admitted for a moment that the cost of medical treatment should be allowed to debar any sick insured person from receiving first-class treatment or the use in ample amount of any drug however costly it might be. On this the witness was asked:—

(Q. 18078.) One sometimes hears it said that it is true in theory but not in practice. What do you say to that? That while a doctor may in theory prescribe anything he likes, in actual practice he is constantly being badgered about the expense of drugs, and told to keep it down?—That is, I would say, a misunderstanding in some quarters. It is not true so far as my experience goes. No doctor has ever been challenged on the cost of his drugs as a question by itself. . . . It is discovered sometimes that a practitioner in a district in treating his patients spends three or four times as much money as his neighbour practising in the same district among the same class of people, and that is inquired into.

As regards the arrangements for securing proper economy it was thought that the responsibility for initiating action should be vested in some competent central authority, and the invidious onus of so doing thus removed from the local committee.

Another suggestion put forward was that there should be prohibited the prescribing under a proprietary name of medicines which are well-known definite chemical substances, and the prescribing of secret remedies the composition of which is not adequately disclosed.

Generally speaking, it would be a distinct advantage if the prescribing of proprietary medicines was discouraged and sanctioned only in the case of some new medicament which is a new remedy and for which there is no equivalent non-monopoly substitute.

PRACTICE AMONG THE HIGHLAND CROFTERS.

(App. LXX. and Q. 18893–19171.)

Dr. Alexander Asher, who is a general practitioner in Thurso, Caithness, and in a wide surrounding area, gave an account of his practice, which includes a large number of crofters, small farmers, and fishermen. He said that he sent his operation cases to Inverness and Edinburgh, and that urgent cases were usually admitted at once; his patients generally preferred to go to Edinburgh. Notwithstanding his wide and scattered district, he did not do any dispensing himself excepting in emergencies; the prescriptions were generally taken to Thurso by carrier, &c., and dispensed there.

Dr. Asher thought that compulsory health insurance for crofters and share-fishermen, who are at present outside the Act, would prove a great boon. He suggested that local administration of money insurance benefits in the Highlands and Islands should be in the hands of the clerk to the parish council, and that a county rate not exceeding 2*d*. in the £ should be raised for the purpose of providing hospital, nursing, and specialist services.

NATIONAL FARMERS' UNION OF SCOTLAND.

(App. LXXI. and Q. 19172–19399.)

The evidence in this case was given by Mr. J. C. Henderson, whose principal contention was that the agricultural industry had been paying an undue share of the burden of National Health Insurance, because agricultural work was a healthy occupation, as shown by the large surplus of the Rural Workers' Friendly Society. It was the contention of the Farmers' Union that contributions should be levied on the different industries according to their claims experience, as in ordinary insurance practice, and the greater part of the examination of the witness was devoted, without apparently much success, to trying to get him to recognise that his proposal would involve insuperable administrative difficulties.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Irish Free State and the Medical Register.

THE medical profession of the Irish Free State has been taken aback by the sudden announcement made last week by the Executive Council that the Government had decided to establish an independent Medical Register for the State. Last April the Government asked for the views of the medical profession through its several organisations and corporations, and the medical faculties of the universities. The unanimous opinion of the representatives of these bodies was in favour of maintaining the present system of registration in common with Great Britain. Mr. James Burke, Minister of Local Government and Public Health, whose department dealt with the question, expressed his agreement with the opinion of the medical profession, as put before him, and stated that it was the intention of the Government to pass into law a measure establishing the existent system on a permanent basis. He invited the medical representatives to nominate a small committee with whom he could consult from time to time as occasion might arise. No further consultation took place, and last week this committee was summoned, not to consult with the Minister, but to hear the announcement that the Executive Council had decided to establish a Medical Register for the Free State.

If the decision to establish a separate Register for the Free State is carried out, it can hardly fail to affect the medical schools of Ireland adversely, at any rate for a time. What rights or privileges medical men educated in Ireland may in future be given as regards admission to the General Register must remain uncertain for the present. More than half the graduates and licentiates of the Irish schools practise outside the Free State, and until new arrangements are complete students are unlikely to enter the Irish schools; while they cannot ascertain what may be their future prospects, they will go where they can gain access to the wider Register. In fact, the immediate result will almost certainly be that Irish medical students will seek their education outside the Free State. Unfortunately, the medical schools of the Free State, in Dublin, Cork, and Galway, possess very little endowment, and are almost entirely dependent on the fees of their pupils for ability to carry on. Even a temporary absence of students will mean a severe crisis, and it is hardly too much to say that extinction may follow for some of them. The position is a serious one, and requires very careful handling both on the part of the Free State Government and of those who will have the responsibility of presenting the position from the standpoint of the medical profession. It is to be hoped that the decision of the Executive Council is not irrevocable.

Free State Army Medical Service.

A revision has been made in the scale of salaries of the medical officers of the Irish Free State Army Medical Service. The positions of Major-General and chief sanitary officer, which carried salaries of £1500 and £1250 a year respectively, have been abolished, the highest rank now being that of Colonel, with a salary of £1400 a year. The other ranks in future will be Lieutenant, Captain, and Commandant. The initial salaries in each rank will be 12*s*. a day, £1 6*s*. a day, and £1 17*s*. a day, with periodic increase of salary, rising after five years' service to maxima in each rank of £1 5*s*., £1 15*s*., and £2 7*s*., respectively. As compared with the previous scale the initial salaries are lower, but certain officers after five years' service will receive higher pay than under the old scale.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Medical Qualification in Transylvania: a Harsh Position.

THE peace of Trianon has created a curious situation for our medical students. Nominally, before dissolution of the Empire, Hungary had two universities with medical faculties, one at Budapest, the capital, and the other at Kolozsvár, the capital of Transylvania. While the Budapest University had from 4000 to 4500 medical students, the Kolozsvár University modestly provided for between 400 and 500 students. This was due to the fact that the Budapest medical faculty had the best possible equipment, its members in the years immediately preceding the outbreak of the war having been sent to Vienna, Berlin, Paris, and London to study medical institutions and to copy what was best. The Government did not spare money, and the clinics of the Budapest University inspire the greatest enthusiasm among those who see them. Foreign visitors to the International Medical Congress of 1909 held in Budapest retain a vivid memory of the Budapest clinics; in fact, numerous English and American physicians later came to Budapest for post-graduate medical study. Even Transylvanian students preferred to go to Budapest, not excepting students from Kolozsvár itself. These Transylvanian students, having begun their studies in Budapest, finished in Budapest when Transylvania was torn away from Hungary. When the Roumanian Government took over the Kolozsvár University they employed Roumanian professors and the language of the University was changed to Roumanian, which was a foreign tongue and is still almost foreign to most of the Transylvanian students. As Transylvania is a large territory the number of medical students who were nearing the completion of their studies in Hungary amounted to about 1000. These students, not speaking the Roumanian language, preferred to finish their studies in Budapest, Szeged, Pécs, and Debretzen (the four universities of Hungary) and pass the final examination in the language with which they were familiar. However, when they received their diploma in Budapest or in one of the other three universities, and came home to Transylvania, they received the surprising news that they were not allowed to practise in their own land with Hungarian diplomas unless they passed the final examination in Roumanian. This entailed new work for the students, and it meant at least a year's loss to them. This regulation hurt them the more in that the whole administration of Transylvania remains at present as it was under Hungarian rule.

Salzer Treatment of Stricture of Œsophagus.

Prof. János Bokay, of the Pædiatric Clinic of Budapest University, has made experiments with the Salzer method of treatment for cases of caustic poisoning followed by stricture of the œsophagus. Swallowing potassium hydroxide is a frequent accident in Hungary. Owing to the great economic hardships the wives, even in the middle classes, are now forced to work in offices, millineries, and such like places, leaving the supervision of their children in the hands of the eldest child or of neighbours. Such families live in one room, which, of course, serves as the kitchen, and children have access to bottles containing the alkali. The Salzer method of treatment consists in applying the No. 30 Bass sound, which is a heavy œsophageal sound filled with small shot and soaked in warm water to make it flexible. The treatment is begun from the third to the sixth day following the accident. The sound is left in the œsophagus for half an hour and is reapplied every three or four days for several weeks. While Salzer published accounts of 34 cases thus treated, Prof. Bokay has reported 122. In 110 of these cases no strictures developed. The results were less satisfactory in five of his cases because the treatment could not be applied regularly. There were seven fatalities; in three death was due to perforation of the œsophagus followed by mediastinitis, and in four death was due to the poison itself. Prof. Bokay strongly advises the use of this method of treatment for adults as well as children.

Large Doses of Iron in Pernicious Anæmia.

Dr. Rausch, of the Third University Clinic, Budapest, has put the Lichtenstein, Lindberg, and Barkan method of treating pernicious anæmia to the test. These workers recently recommended for anæmia doses of iron ten times as large as those in general use up to the present. They have obtained good results without any gastric troubles worth mentioning. Following their example Dr. Rausch gave reduced iron in daily doses of ½ g., to be taken in wafers, always before meals, so that any particles of iron possibly adhering to the teeth might be removed by subsequent mastication. In cases of pernicious anæmia in which other remedies had failed he tried on the first and second day 0·5 g. ferri redacti, twice daily, then for two days 0·5 g. four times daily, and then for two days or more 0·5 g. six times daily. No injuries to stomach or intestines have been observed following this therapy. Decided improvement was noted in two out of five cases and a transient improvement in two cases. This method certainly deserves a trial, as it evidently exercises a strongly stimulating effect on the blood-forming constituents of the bone-marrow in cases which are still capable of improvement.

Insurance Doctors' Fees.

The medical advisers of life insurance companies have started a movement here to induce the insurance companies to pay medical fees in proportion to the depreciation of the currency from its normal rate of exchange. The fees at present are much less than formerly. The lowest fee for an insurance certificate in pre-war times was 10 crowns (8*s.* 4*d.*); the fee at present does not amount to 5*s.* As the ratio of the face-value of the policy to the premium is the same that it was in pre-war days, the medical advisers insist on being paid on the same basis. Physicians are ready to refuse medical examinations for insurance companies if the latter are obdurate.

Appeal for Legislation to Regulate Medical Advertising.

Prominent members of the medical faculty have appealed to the authorities to amend the law regulating advertising, and provide that the editors of newspapers, journals, and other publications shall be held responsible for all advertisements or other matters published referring to the practice of medicine or dealing with secret remedies. Advertisements should be held to be of a secret character when they relate to the treatment of any disease or affection without medical confirmation, where the testimonials are not signed by physicians, and where the declarations of treatment are simply guaranteed by laymen or groups of laymen. Penalties, it is urged, should be provided for infractions of these rules.

WIGAN INFIRMARY X RAY DEPARTMENT.—The board of management of the Wigan Infirmary have decided to proceed with the erection of a new X ray department and with the necessary equipment for artificial sunlight treatment. The cost of the building and equipment will be about £9000.

MEMORIAL TO DR. MARY STURGE.—The Medical Women's Federation, of which the late Dr. Mary Darby Sturge was president from 1920 to 1922, has issued an appeal for subscriptions to a memorial fund. Dr. Sturge, who died in March last at the age of 62, was honorary physician to the Birmingham and Midland Hospital for Women and joint author with Sir Victor Horsley of "Alcohol and the Human Body." The money which is to be raised will be presented to the Taylor Memorial Home of Rest for Women at Birmingham for the dedication or endowment of a bed. Dr. Sturge was one of the founders of the home, and just before her death she inaugurated a scheme for the erection of new quarters for the nurses. These are now complete and the building has been named the "Dr. Mary Sturge Wing."

Public Health Services.

MENTAL HOSPITALS SERVICE.

Barnwood House Hospital for the Insane, near *Gloucester*, has accommodation for 150 patients, 15 of them voluntary boarders. The aim of the hospital is to admit recoverable patients and not to use the accommodation for chronic cases. The pathological work is at present dependent on Bristol University, but a pathologist has recently been appointed to the Gloucestershire Royal Infirmary and will undertake the work of this hospital. The medical superintendent calls the attention of his readers to the need for out-patient clinics for incipient cases. Such clinics do not appear to have been established in Gloucester yet. A renovation of the cowsheds of the institution has been undertaken in order to ensure milk-supply under the best conditions. The greater part of the report consists of statistical tables. A curious anomaly appears in the name of the institution, which avoids the obsolete "asylum" and yet retains the almost equally objectionable word "insane."

The Retreat, York.—The 128th annual report shows that the work there is being carried on at the previous high standard. The number of voluntary boarders reaches the high figure of two-thirds of the total inmates. The recovery-rate is 32 per cent. and the death-rate 10 per cent. The malarial treatment of general paralysis is being continued and one patient has been discharged apparently cured. Although there seems no doubt that this treatment profoundly modifies the course of the disorder, each case seems to be a law unto itself. The problem of occupation therapy is being tackled with ingenuity and perseverance, and a great deal has been done to increase output and introduce simple and attractive handicrafts. The universal sense of need for early treatment is being felt by the medical officers, and they are hoping to approach it on somewhat original lines. The report includes an outline of the history of the institution, photographs, particulars from the point of view of patient and nurse, and some useful statistical tables.

The Lady Chichester Hospital, Hove, was a pioneer among institutions for cases of early nervous breakdown. The work is being carried on to the limit of financial possibility and there is always a long waiting-list for the 40 available beds. By far the greater number of cases are able to return to normal life when they leave the hospital; a few go to convalescent homes or become daily out-patients, living outside but spending their day in the easier environment of the institution. All the usual methods of treatment are employed at discretion, particular stress being laid on fresh air and generous diet. Search is made for septic foci, and hydrotherapy and electrical treatment are applied to suitable cases. All kinds of "occupational therapy" are employed, handicrafts, gardening, housework, and work for the annual bazaar being the chief features. Old patients keep in touch by means of the "club night," a weekly entertainment or dance to which all old patients are welcomed. There is no doubt that the work carried on is invaluable for a certain class of patient, and there is scope for considerable extension of the work when funds are available.

Glamorgan County Mental Hospital, Bridgend, supports 1800 mental patients. There is a larger proportion than usual of the congenital class and of recurrences: indeed, the medical superintendent reckons that 70 per cent. of the patients under his care may reasonably be assumed to be beyond hope. The death-rate for the year was 8·4 per cent. The high incidence of tuberculosis and dysentery, partly due to the overcrowding of the premises, has been reduced. A consulting surgeon has been appointed and a local dentist attends when necessary. Every effort is made to interest the junior nursing staff in their work, and 27 have passed the junior examination for the certificate of the Medico-Psychological Institute, but the proportion of failures is very high. The new house, Glan Rhyd, for convalescent male patients on parole is proving very successful, and only eight cases have abused their parole during the year. The report includes notes by the three chaplains and full statistical tables.

The report of the *Staffordshire Mental Hospitals Board* includes the three institutions under the direction of that body. At the *Stafford Mental Hospital* over 1100 cases have been under treatment during the year, the continued steady increase making the question of additional accommodation an acute one. The death-rate has been 6·33 and the recovery-rate 29·33 per cent. among men and 37·69 per cent. among women. The medical superintendent emphasises the importance of early treatment by showing that in 60 per cent. of the recoveries the duration, prior to admission, was less than two weeks, and was over three months in 11·3 per cent. only. The very low tuberculosis death-rate is attributed to the unremitting attention given to ward hygiene and diet, in which the inclusion of "marmite" has played some part. There has been no diarrhœa or dysentery. The installation of electric light and vacuum cleaners has much improved the condition of the wards. From the pathological department two papers have been published: (1) on the production of formaldehyde by intestinal bacteria in connexion with the ætiology of nervous breakdown, and (2) observations on the types of blood-sugar curve found in different forms of insanity. The latter embodied very extensive research and suggested interesting and important differences in metabolism between the sane and insane. In addition, the histological condition of the ductless glands in mental patients has been the matter of investigation.

Burntwood Mental Hospital (Staffs. Co.) has 900 patients, and the general health has been maintained at a high standard. In addition to routine work in the laboratory Dr. G. F. Cobb has been carrying on an investigation into the chemical aspects of epilepsy. The work of the dental surgeon has been of much value.

Cheddleton Mental Hospital (Staffs. Co.) is overcrowded with 1045 patients, including cases of mental defect, and there is a shortage of nurses. Many structural renovations have been put in hand and many more are required. The arrangement of the dietary scale is made difficult by the absence of any gas-supply for cooking. Cheese and marmite are relied on for the supply of vitamins A and B respectively. Orthopædic treatment is to be commenced for suitable cases, and the nurses are to have special training in education methods for the mentally defective. In addition to routine work carried on in the laboratories Dr. F. H. Stewart has investigated the chemistry and bacteriology of intestinal toxæmia. He has found that one variety of non-lactose fermenting organism is regularly present in the fæces of chronic patients when they are undergoing acute exacerbations. The principles of parole and open-air wards are employed with success.

Carmarthen Mental Hospital has 600 patients. The work is hampered by inadequate water-supply and drainage, but a recovery-rate of 36·44 per cent. has been obtained. The cases of excitement greatly exceeded all other forms of insanity on admission. Of the 43 cases discharged as recovered 74 per cent. were in residence for less than a year. The death-rate is 7·79, the proportion attributed to tuberculosis having much diminished. It is hoped to improve the amusement facilities and dietary in the near future.

West Sussex County Mental Hospital, Chichester—The report records a successful year of work. The 760 patients include private and ex-Service cases. There has been a recovery-rate on the admissions of 25 per cent. with a further 25 per cent. relieved. Special stress is laid on the restoration and maintenance of physical health; every new case is examined as a routine by the specialists in medicine, surgery, diseases of the eye, throat, ear, and teeth; and ten successful operations have been performed. There is complete freedom from infectious

disease and only nine cases of tuberculosis are under treatment. Occupational treatment is provided in the farm, grounds, and workshops, and in the domestic departments for women. Parole is given wherever possible. The medical records have been supplemented by nursing report sheets, which have been most carefully kept and have proved a valuable and illuminating addition to the records. A large proportion of the nurses hold the certificate of the Medico-Psychological Association.

Hertfordshire County Mental Hospital, St. Albans, accommodating 1180 patients, shows a recovery-rate of 33·8 per cent. and a death-rate of 6·11 per cent. Extensive use is made of the parole and discharge-on-trial systems and the provision of money grants where needful. Several major operations have been performed and 110 patients have received attention from the dental surgeon. Clinical rooms have been provided in connexion with the admission and infirmary wards, affording opportunity for valuable private interviews. Many of the nurses hold, or are training for their certificates, and the nursing of sick male patients by women has proved satisfactory.

Brighton County Borough Mental Hospital, Haywards Heath, supports 820 cases. Parole has been introduced and four of the female wards have open doors into the garden throughout the year. The dental surgeon has attended 435 patients during the year. Clinical rooms have been provided for three wards, and the provision of verandahs and admission wards for recent and recoverable cases is under consideration. Patients are encouraged to wear their own clothes. A large proportion of the nurses hold the M.P.A. certificate.

Kent County Mental Hospitals Service maintains two hospitals. 1750 patients, including 70 "Service" cases, are accommodated at *Barming Heath, Maidstone*. There is a recovery-rate of 39·6 per cent.; 65·7 per cent. of these taking place within a year of the onset of illness. The death-rate touched the remarkably low figure of 5·6 per cent.; post-mortem examinations were carried out in 84·8 per cent. of fatal cases. Occupational therapeusis is organised under a special officer and the patients are classed in three groups: (1) those able to work by themselves; (2) those able to work in parties; and (3) those requiring individual attention. It is hoped to develop the third class further. Many patients have been sent out on trial, several of them with a money allowance. Most of the nurses hold the M.P.A. certificate.

At *Chartham Downs* (*Kent Co.*) there are 1150 patients, four of whom have been in the hospital since its opening in 1875. Benefit has been obtained in cases of general paralysis by the malarial treatment. As in so many mental hospitals, there is a large number of senile cases which could more happily be nursed in infirmary wards. There have been mild epidemics of influenza and dysentery. The death-rate is 7 per cent. and the recovery-rate 30·7 per cent. Two new blocks for male patients are in course of construction. Many patients have been allowed out on trial, short leave, and parole, although these privileges have not yet been granted extensively on the female side.

The *City of Birmingham* maintains two institutions: *Winson Green* and *Rubery Hill and Hollymoor*, accommodating some 2500 patients. At the former there has been a recovery-rate of 45 per cent. on the direct admissions. The majority of these cases had a stay of from 4 to 12 months in hospital. The death-rate was 8·38 per cent., a drop from the previous year, and the lowest since 1861; post-mortem examinations were made in 79 per cent. The general health has been good except for an epidemic of influenza. Six cases of general paralysis have been treated by malarial injection with resulting improvement, but no complete recovery so far. Some 70 per cent. of the patients are kept occupied about the grounds, workshops, and wards, and there is ample provision of entertainments and sports. Parole and short leave have been extensively granted. At *Rubery Hill* the death-rate has been 6·78 and the recovery-rate 48·6 per cent., with a further 15·8 per cent. "relieved." Special attention has been paid to the discovery and elimination of chronic septic foci, and a staff of consultants and specialists has been gathered as well as a radiographic equipment. The figures given suggest that this method of approach is of the greatest value. The hospital is approved as a training school for mental nurses. The Birmingham hospitals are fortunate in the help they can obtain from the excellently equipped laboratories under the honorary directorship of Sir Frederick Mott.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Average elementary school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.§
Bootle ..	12,297	11,126	3778	10,812	31·7
Margate ..	3,255	2,910	1074	847	12·0
Macclesfield .	4,441	—*	1281	784	47·5
Blackburn ..	17,522	15,110	5088† / 1284‡	5,450	24·1
Wigan ..	13,575	11,035	3750	7,060	24·0

—* Not given. † Routine. ‡ Fourteen-year-old group.
§ Excluding dental defects and uncleanliness.

Bootle.

THIS report presents a number of features calling for comment. In it is given the actual cost of medical inspection, which is in Bootle 4*s.* 7½*d.* gross and 2*s.* 3½*d.* net for every child on the school roll. The ratepayers can see that this figure is reasonable considering the district, and compares well with the rest of the country. The work of past years is shown in a table enumerating routine and special examinations from the year 1908 up to the present date; the total of inspections in 1908 was 1565, against 15,048 in 1924. The next paragraph shows some of the results obtained—e.g., malnutrition has fallen from 14·3 to 5·9 per cent. and enlarged tonsils from 11·2 to 7·6 per cent. The number of barefooted children is put down at 2·7 per cent.—they may be better off than others with badly fitting and defective footwear. Bootle is fortunate in having clubs which distribute clogs to suitable and deserving cases.

It was not found necessary to close any school or department for infectious disease during the year. The town is abreast of the times in having zinc ionisation at its aural clinics, a method which seems likely to repay its cost to the community—cutting short cases of otorrhœa which would otherwise proceed to deafness and other grave complications. The treatment is carried out by passing an electric current of 3 milliamps. for ten minutes through the ionising fluid (5 gr. of zinc sulphate to 1000 c.cm. of water) contained in the external ear channel. Dr. F. T. H. Wood considers that in cases of double otorrhœa it is better to restrict ionisation to one ear at a time, while the other ear receives cleansing treatment There are no special schools in Bootle. Arrangements for the treatment of crippling defects include the provision of special hospital beds and the conduct of a remedial exercises clinic. This clinic is staffed by a qualified masseur and his assistant and is supervised by the school medical officer with the coöperation of a consulting orthopædic surgeon. The payment by parents for treatment amounted only to £56 7*s.*, of which £39 19*s.* represented payment for dental treatment.

Margate.

Intimate coördination is maintained between the various health services, as Dr. Rowan McCombe himself carries on the duties of school medical officer, medical officer of health, and medical adviser to the

infant welfare centre. Commenting on the 75 per cent. reduction in the numbers of unclean children during the past few years, Dr. McCombe draws attention to the increasing practice at some schools, especially among the girls, of wearing a simple tunic uniform—an excellent practice which makes for tidiness and cleanliness and inspires the wish to "live up to the uniform." Goitre is of rare occurrence; only one case, with mild enlargement, was seen in the district. Fifty-eight operations for tonsils and adenoids took place at the school clinic, the children being kept at the clinic for one night following the operation and seen the following morning by the surgeon and again inspected in a week's time. Adequate arrangements are made for the treatment of mentally defective children and deaf-mutes, and severe cases of epilepsy, and a strong plea is put forward for an open-air school to ensure treatment for the anæmic and pre-tuberculous children.

Macclesfield.

The school medical officer, Dr. J. Hedley Marsh, who is also medical officer of health, issues a brief report, much of which is only of local interest. Tonsils and adenoids seem to receive thorough treatment and after operation are carefully followed up, while the parents are advised to see that the children carry out the after-treatment which is clearly described on printed cards. Visual defects rarely fail to secure treatment and dental inspection is well carried out, nearly 90 per cent. of all the children in the schools being inspected by one of the three dentists. Dr. Marsh records, however, that only 31 per cent. of those requiring treatment receive it, and this, as he says, is not satisfactory. There are no special schools in the area, and Dr. Marsh stresses the necessity for a mentally defective school and hopes that one may be established. An orthopædic clinic is carried on at the general hospital and good work is evidently done at the general school clinic.

Blackburn.

Dr. W. Allen Daley reports progress in organisation during the past five years. An additional age-group has been included—viz., the "leaver" or 14-year-old group. Almost all the clinics began within this period and lately there has been added an orthopædic clinic for early treatment. He regrets the delay that occurs in dealing with adenoids, owing to lack of accommodation. Dr. Ella Mackenzie found that of the children who should have been wearing glasses only 75 per cent. were doing so. Taking into consideration the large proportion of spectacles worn which are no longer efficient, the need for some kind of spectacle "roll call" is evident. Since the hearing of every child of 8 years has been tested by the "forced whisper" the percentage of minor defects of hearing has risen from 0·4 to 1·5 per cent. Dr. Daley hopes for an increase in the clinics and for further accommodation in the open-air school and classes, and regrets there is still no physically defective school. On the other hand, there is a good mentally defective school, and a return by the late headmistress, Miss Clayton, deals with 140 scholars since 1910 who can be traced. Of these 106, or 75 per cent., are in work. This figure shows how much such a school can do when run with zeal and ability.

Wigan.

Dr. H. Whitehead's report is a concise statement of facts with little comment, but obviously the school medical work is handicapped by inadequacy of staff. The numbers examined in the code groups are incomplete—the same lacunae have stood in the way of a thorough control of measles. Since only one half-day a week has been available for refraction, about one-third only of the cases receive prompt attention. Dental work, too, was similarly limited, but recently the dental sessions have been increased. There is a lack of special schools of all types; a few mentally defective children are attending classes for the dull and backward, but the accommodation is inadequate and such classes have not the power of salvage that belongs to good special schools. A school camp was held with beneficial results, but this is a poor substitute for a permanent open-air school. There appears to be none of the special methods of dealing with cripples by which so many children are cured or made self-supporting in other areas. Good coöperation is maintained between the various branches of the medical services, and records from the welfare centres are available in the schools.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 8TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 63; scarlet fever, 1250; diphtheria, 691; enteric fever, 85; pneumonia, 415; puerperal fever, 37; cerebro-spinal fever, 3 acute poliomyelitis, 7; encephalitis lethargica, 41; continued fever, 1; dysentery, 3; ophthalmia neonatorum, 110. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 22 from measles, 8 from scarlet fever, 28 from whooping-cough, 18 from influenza, and 20 from diphtheria. There were 108 deaths of children under 2 years from diarrhœa and enteritis, as compared with 101, 64, 50, 44, and 29 in the preceding weeks. In London itself there were 8 deaths from diphtheria, 3 from whooping-cough, and 6 from influenza.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

J. S. Elliot is re-entered as Surg. Lt. Comdr. with seniority of Sept. 29th, 1922.

Surg. Lt. Comdr. P. W. Carruthers is placed on the Retd. List.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lts. to be Surg. Lts.: D. R. F. Bertram and R. Wear.

ROYAL ARMY MEDICAL CORPS.

Maj. J. C. G. Carmichael retires on ret. pay and is granted the rank of Lt.-Col.

The undermentioned Capts. to be Majs.: E. W. Wade, W. K. Morrison, E. Percival (Prov.), and H. C. D. Rankin (Prov.).

ARMY RESERVE OF OFFICERS.

Capt. A. Robertson, late R.A.M.C. Spec. Res., to be Lt.

Capt. G. C. F. Roe, late temp. Capt., R.A.M.C., to be Lt.

TERRITORIAL ARMY.

Capt. A. E. L. Devonald, having attained the age limit, is retired and retains his rank.

Capt. C. A. R. McCay (late R.A.M.C.) to be Lt. and relinquishes the rank of Capt.

Lt. C. M. Bradley (late R.A.M.C.) to be Lt.

E. W. Ashworth to be Lt.

ROYAL AIR FORCE.

Flying Officer F. K. Wilson is promoted to the rank of Flight Lt.

INDIA AND THE INDIAN MEDICAL SERVICE.

The following are granted leave: Lt. F. W. Mathews, Civil Surgeon, Ghazipur; Maj. H. P. Cook, Civil Surgeon, Allahabad; Lt.-Col. F. W. Sumner, Civil Surgeon, Simla (East); Maj. T. C. Boyd, Chemical Examiner, Bengal, and Professor of Chemistry, Medical College, Calcutta; Capt. R. H. Malone, Acting Director, Bombay Bacteriological Laboratory; Major R. Knowles, Professor of Protozoology, School of Tropical Medicine and Hygiene, Calcutta; Lt.-Col. Macmillan, Civil Surgeon, Simla; Lt.-Col. A. W. Overbeck-Wright, Superintendent, Lunatic Asylum, Agra; Lt.-Colonel G. Hutchinson, officiating Inspector-General of Civil Hospitals, United Provinces; Col. A. W. R. Cochrane; Lt.-Col. I. M. Macrae, Lucknow; Lt.-Col. R. F. Baird; Maj. P. B. Mills, Civil Surgeon, Bahraich; Lt.-Col. W. S. Willmore, Civil Surgeon, Cawnpore; and Lt.-Col. T. W. Harley.

NEW MEDICAL COLLEGES IN INDIA.

The King Edward Hospital and the Govdhandas Sunderdas Medical College, fully equipped institutions established by the Bombay Municipality, were opened in July. The Medical College is the first unofficial medical institution in Bombay city and had been recognised by the University of Bombay. Last month also saw the opening of the Prince of Wales's Medical College at Patna and the laying of the foundation-stone of the Wadia Maternity Hospital in Bombay.

Correspondence.

"Audi alteram partem."

FAMILIAL ABDOMINAL LESIONS.

To the Editor of THE LANCET.

SIR,—The interesting article by Mr. G. P. B. Huddy in your issue of August 8th raises once more the question of the relative importance of heredity and environment in these conditions, and whilst it might seem that Mr. Huddy favours the heredity hypothesis, a closer examination of his paper makes it clear that this is not the case. A family history of "indigestion" is by itself too nebulous to allow of any accurate deduction being made; extensive family histories of duodenal ulcer or gall-stones, such as are quoted, are very striking, though it is a little surprising if only two examples of such convincing histories occurred amidst 300 patients.

The following example recently came to my notice. The father had a gangrenous appendicitis in 1900 and a perforated duodenal ulcer in 1922. Of his three sons, the eldest had acute appendicitis in 1917, the second a gangrenous appendicitis in 1919, and the third a gangrenous appendicitis in 1914. It is dangerous to assume an hereditary factor from such data; the patients referred to have long been known to me as voracious eaters, but whether this is hereditary or environmental I would hesitate to say. Further, I know that for many years they were attended by an unqualified dentist whose technique was neither orthodox nor desirable.

One can imagine the difficulties of an Eastern physician when asked to write upon a "family history" of salpingitis in the harem of his ruler. On the whole the infective theory remains tenable.

I am, Sir, yours faithfully,

London, W., August 12th, 1925. T. IZOD BENNETT.

To the Editor of THE LANCET.

SIR,—Two years ago, when Mr. James Sherren delivered a lecture in Dublin on Gastric Ulcers, he drew attention to the fact that these ulcers might run in families. I was very interested, as at that time my father had under his care a case of gastritis whose father had died six months previously from gastric carcinoma. I investigated their family history, and now that attention has been drawn to this point in your journal, I think the facts of interest.

The grandfather of the present patient suffered from constipation and dyspepsia. He had to walk about during his meals "to bring up wind." He died from what was diagnosed as "perforation of the intestine." In appearance he was tall, thin, and pale. He neither smoked nor drank. Of his children one showed no signs of gastric symptoms and was unmarried. The second had occasional indigestion, and died from pneumonia. The third had a typical duodenal ulcer, the clinical signs being confirmed by X ray examination. He refused an operation. His only child was healthy. The fourth, the father of the patient, died from cancer of the pylorus, and the patient, aged 21, suffers from agonising pains about one hour after food, with acid eructations. He has never vomited, and refuses to be X rayed. His sister and brother are quite healthy. The remaining two children were daughters, one of whom living abroad suffers from "indigestion, particularly after potatoes," and her eldest child, aged 15, has frequent gastric attacks. The last child when 21 suffered from a typical acute gastric ulcer, and has done so at intervals throughout life. Her eldest child when 21 developed symptoms of duodenal ulcer, with attacks that recur each Christmas. He also refuses X ray examination. Her second child at about the same age commenced to suffer from indigestion, but on rigorous dieting these attacks pass off. They have all lived normal healthy, hygienic lives, are of good physique, and the present generation possess perfect teeth, and, with one exception, are practically non-smokers and non-drinkers.

I am, Sir, yours faithfully,

SYLVIA B. WIGODER, M.A., M.B., T.C.D.

Dublin, August 17th, 1925.

SUBCUTANEOUS INJECTION OF COLLOIDAL SULPHUR IN NEURITIS.

To the Editor of THE LANCET.

SIR,—I will be much obliged to you if you will do me the honour of publishing the following questions as regards Wagner-Jauregg treatment of dementia paralytica. So far as my personal knowledge goes, I believe that the therapy is still empiric; I have not yet come across any scientific explanation. I assume there is nothing specific in the organism of tertian malaria, the remissions obtained, whether complete or incomplete, being in all probability due simply to the changes of the body temperature. I have obtained encouraging results in certain forms of chronic neuritis with the intramuscular injections of colloidal sulphur (sulfoidol Robin). Symptoms imitating malarial rigor followed. No new infection is introduced to call for quinine—for example, to mitigate the effects of an inoculation. The proceeding, I think, may be used as an argument to prove or disprove the specificity of the tertian plasmodium in the method of treatment, though I believe no such property is claimed.

I am sorry I have not yet met any case of dementia paralytica through eight years practice of the profession. This may be due to the fact that malaria is endemic in this country and syphilis comparatively rare. I shall be very grateful to any member of the medical profession who will test the use in appropriate cases of colloidal sulphur in this way, and will communicate the results through the pages of THE LANCET.

I am, Sir, yours faithfully,

Palestine, July 23rd. DJAMIL F. TUTUNJI, M.D.

THE ÆTIOLOGY OF CANCER.

To the Editor of THE LANCET.

SIR,—The reminder by Sir Charles Ballance of the views held by the late Mr. Shattock, than whom there was no one more conversant with the clinical as well as the pathological knowledge of cancer, brings into prominence the conviction of the clinician, that tubercle, a known parasitic disease, sarcoma and carcinoma in their modes of onset, in their course, in their termination, and in their curability are more or less alike. It took 40 years to discover the tubercle bacillus after tuberculosis was pronounced to be of this class, and for over 30 years the hunt for the parasite of sarcoma and carcinoma has been going on and has not yet been actually successfully finished. Indeed, there are signs that the hunt may once again be side-tracked. While the clinician has no difficulty in recognising cancer as a member of the great group of parasitic diseases, the pathologist has ever found a stumbling-block since the great advances in histological discoveries during the nineteenth century. Tubercle originates in connective tissue, so does sarcoma, but cancer begins in an epithelial covering. The parasite in tubercle makes a tubercle nodule and when that is completed it starts another, and each nodule is made for and by the parasite. The proliferation of cells is started by the parasite and food in abundance is produced by them. In carcinoma, a parasite—let it be assumed—locates itself in an epithelial cell, makes it reproduce itself and elaborate food—a special food for the parasite. The parasite by its vigour stimulates growth and the new cells thus formed make for it all it needs for propagating itself and for increasing its vigour and strength. In all subsequent growths in other parts of the body epithelial cells like those of the original growth appear. The unsolved problem is how that happens. Does the

parasite carry with it an epithelial cell or a derivative which is equivalent in reproductive powers to a full-grown cell, or has the parasite power, wherever it locates itself, to induce a connective-tissue cell to become transformed into an epithelial cell, the only kind it is associated with and the only one that is capable of elaborating its special food?

The former view has held its ground for many years and the lymph and blood circulation mechanism has been considered a sufficient cause for the spread of the new growth into distant parts of the body. Often that explanation is very inadequate, and surely very untrustworthy. A parasite, like every other living thing, seeks its food, and one of the bacterial groups obtains it by creating activity in cells around and by making them elaborate what it wants. It then often kills its host by exhausting the supply of nutriment or by locating itself, perhaps accidentally, in a vital part. To attain its purpose effectively the parasite of cancer should possess the power of converting a cell of the connective tissue into an epithelial one, the only form capable of elaborating suitable food for the special parasite of cancer. Biologists may know of instances in which cells, under appropriate stimuli, become converted into other and distinct forms with different functional properties. In pathology there is not, to my knowledge, an evident example.

I am, Sir, yours faithfully,

Cambridge, August 15th, 1925. JOSEPH GRIFFITHS.

To the Editor of THE LANCET.

SIR,—The letter of Sir Charles Ballance in to-day's issue of THE LANCET calls for a reply on my part.

The late Prof. Shattock was almost alone among well-known pathologists in adhering to the parasitic theory of cancer. Apart from him, pathologists in this and in other countries have been almost unanimous in rejecting the theory on the grounds that it is incompatible with the phenomena of cancer. The supporters of the theory have been almost entirely bacteriologists and clinicians, and they have never taken the trouble to meet the objections which have been brought against it by pathologists.

Prof. Shattock did not have before him the evidence that it is possible to induce cancer at will without taking the supposed parasite into consideration nor, until his later years, was he aware that it is possible to cultivate tissue cells in vitro.

The cancer germ cannot be present in the irritant used to produce cancer since this has frequently been submitted to temperatures of 300° C. or over and is thus not comparable with the tuberculous dust to which Sir Charles Ballance refers. If the parasitic theory is true the germ must therefore, as I have said, be present either in all animals or in the atmosphere. The former alternative is negatived by Dr. Gye's facts, since, if it were true, it should be possible to produce cancer by his "specific factor" alone, which is not the case. We are thus left with the conclusion that this intracellular germ is universally diffused in the atmosphere! Can any of those who support the theory suggest any other alternative?

I am, Sir, yours faithfully,

Manchester, August 15th. CHARLES POWELL WHITE.

To the Editor of THE LANCET.

SIR,—The work of Dr. A. S. Leyton and Dr. Helen G. Leyton on the streptothrix in sarcomata, to which Dr. W. M. Crofton aptly refers to your issue of August 8th, was amplified later (1917) thus: Prof. Leyton kindly showed me his microscopic preparations of the organism, and I found the appearances tallied with those I had been finding within the nuclei and cytoplasm of the blood cells in cancer subjects at the Leeds General Infirmary. When I then showed him my preparations it was arranged that he would make blood cultures by his customary technique on the next case in which I should find these structures in abundance. This was successfully carried out, and the cultures obtained agreed in type with those he had already secured from tumour filtrates.

The views in Dr. James Young's letter, so ably stated, can be quite endorsed by my own experiences since the above (and since the reference in "Medical Annual," 1921, pp. 63, 64). The fact, too, that Rickettsia bodies are so widely distributed within the bodies of invertebrate animals seems to show that they may form an essential feature of bacterial life-cycles.

The difficulty which has arisen about the "law of fixity of form" is not insoluble. It comes from supposing that all life-forms must obey it. On the other hand, it does not follow that the lowest forms which are to be found within the body of a higher organism are "normal components of the body," to use the words of THE LANCET (July 25th, p. 183). The body or cell may be providing the necessary substrate (during a varying period of time) for a separate life-cycle. This possibility, and the fact that there are ultra-microscopic phases of life, was stated as long ago as 1878 by L. S. Beale in "Microscope in Medicine" (p. 317, &c.), and he pointed out that they can withstand a temperature of 148° C. The place to which he was disposed to assign these minute bodies in the scale of life is that which they seem likely to receive now.

If the prevailing, and materially favoured, school of thought of to-day is now prepared to entertain Béchamp (THE LANCET, ibid.), surely other concessions will follow. For instance, after all, Bastian's work on heterogenesis was not all an incorrect observation. The diverse aspects of life seen by different observers are capable of harmonisation.

I am, Sir, yours faithfully,

Hartley, Longfield, Kent, August 10th. O. C. GRUNER.

DISABLEMENT FROM CHRONIC RHEUMATISM.

To the Editor of THE LANCET.

SIR,—As one of the signatories of the letter which appeared in THE LANCET under the above heading in your issue of July 11th, I have read with much pleasure Dr. Mennell's communication of August 1st.

I am entirely in accordance with Dr. Mennell's views. In the second paragraph of his letter he lays stress on the importance of increasing the fluid intake of patients who are suffering from the non-articular forms of rheumatism. This I can fully bear out as a result of my experience when practising at Harrogate. In such cases one or other of the mineral waters are prescribed practically as a routine, and I have been repeatedly struck with the improvement which quickly takes place following the increased ingestion of liquid. The reason for this is not far to seek if we can regard these non-articular forms of the condition as being due to changes in the plasma whereby the products of muscular activity are inefficiently removed or, in other words, due to an inhibition of the metabolic exchange which results from muscular action. The absorption of comparatively large quantities of fluid which is isotonic with the blood must of necessity greatly assist the removal of waste products.

I think there can be no question that endocrine disturbance plays a greater part in the production of arthritic changes than is generally realised. Attention has been repeatedly directed by many observers to the probable inter-relationship between alterations of the thyroid and arthritic affections. After all the "make up" of an individual is largely dependent on the harmonious action of his endocrine system. The variation in the train of symptoms in different people which arise from the same stimulus is quite explicable on these lines. Broadly speaking, we can classify groups of cases according to their reaction and for these groups we can revive the old name of "diathesis." We should thus define "diathesis" as a disease tendency depending on an altered blood admixture. From this point of view we are quite justified in speaking of an arthritic diathesis. Such a diathesis shows certain more or less well-defined types. We have the young nervous female with tachycardia, sweating, pigmentation, and various trophic changes

with general metabolic upset who tends to develop symmetrical joint changes beginning in the smaller joints. Then we have the stout, well-nourished woman who about the time of the menopause begins to have coarse synovial changes in the hips or knees. These changes are accompanied by all the signs of mild thyroid deficiency. We have also the pale, anæmic, sweating child with a dicrotic pulse, tachycardia, arrhythmia, and a tendency to dilatation of the right ventricle. Such a child is particularly liable to attacks of pyrexia with pain and stiffness of the joints and the formation of fibrous nodules.

Space does not permit a detailed consideration of the rôle played by infective foci in the production of what we term "rheumatic disease." So far as my own experience goes I should certainly say a great deal depends on whether the "exudate" or pus from the focus is under pressure. Pus exuding from a tooth socket is not nearly so likely to cause trouble as a locked-up apical infection. The most dramatic recovery I ever saw followed the removal of an old inflamed appendix from a man who for years had never been free from attacks of arthritis affecting practically all his joints in turn. After his operation he never had the slightest sign of any joint trouble.

As stated in the concluding paragraph, it certainly is a fact that all cases of so-called rheumatism are not what they seem. In this connexion I would say that one should never diagnose a non-articular case as "rheumatic" until every other possibility has been excluded. A very large number of such cases are really due to definite injury with possibly a certain amount of subluxation. This is a veritable pitfall for the unwary, and if after a course of soothing lotions, liniments, and medicine the case falls into the hands of a bonesetter, who, recognising the condition, corrects the deformity by forcible extension and manipulation, and effects a speedy cure, the regular practitioner is apt to feel that "his eye has been badly wiped." The retention of the term "rheumatic" as a description of an ill-defined group of diseases which only agree among themselves in having no connexion with that acute and subacute infection we call rheumatic fever, requires a certain amount of justification. We can only justify it by saying that when we speak of rheumatic disease we know what we mean and that we are referring to a group of conditions whose ætiology has not been thoroughly worked out. With the advance of our knowledge the term will come to be used less and less frequently and finally only applied where it should really belong—viz., to the acute and subacute infections. I am, Sir, yours faithfully,

MATTHEW B. RAY.

Bentinck-street, W., August 17th, 1925.

INDISCRIMINATE SALE OF POISONS.

To the Editor of THE LANCET.

SIR,—There is no record of achievement of which we as a nation have more reason to be proud than our organisation of public health, but there is at least one black patch which ought to give rise to very different feelings.

Scarcely a day passes without its tale of suicide, and in too many cases the cause of death has been found to be the taking of poison. It is not the primary poisons that are guilty (their restriction has served its purpose well) but the ordinary "household" poisons, of which spirits of salt is the chief. This can be sold by any shopkeeper as long as it is contained in a poison bottle and labelled "poisonous," and bears the name and address of the seller. These restrictions are not enforced and are consequently disregarded every day.

This indiscriminate sale of poisons, for which there must be substitutes for household use, constitutes a grave public danger, and calls for the action of the authorities in enforcing the law as it stands or restriction of the sale with the utmost stringency.

I am, Sir, yours faithfully,

House of Commons, August 12th. J. H. WILLIAMS.

THE SUPPLY OF VACCINES TO PANEL PATIENTS.

To the Editor of THE LANCET.

SIR,—As a warning to other panel doctors, I submit my experience of trying to obtain repayment from the Middlesex Insurance Committee of the cost of a vaccine used for a panel patient.

In January last I sent the receipted pathologist's bill to the Committee with a request for repayment. Repeated applications failing to obtain the courtesy of a reply, I recently instructed my solicitors to take proceedings. Their first letter was ignored, but the threat of a writ seems to have stirred the official mind from its hebetude, and I have now, after seven months, received a cheque, without comment or explanation given. I understand from my solicitors that, in point of fact, there would be some legal doubt on whom a writ could be served in such a case.

I am not encouraged to repeat the experiment of using vaccines for panel patients, so long as the present system is in force of making the panel doctor pay the cost himself, in the first place, and getting a refund later, if he can, from the Insurance Committee.

Why cannot the pathologist's account be met by the Committee direct?

I am, Sir, yours faithfully,

C. WILLETT CUNNINGTON.

Dollis-avenue, Finchley, N., August 18th, 1925.

Obituary.

WALTER CARLESS SWAYNE, M.D., B.S. LOND., M.D., CH.B. BRISTOL.

PROFESSOR OF OBSTETRICS IN THE UNIVERSITY OF BRISTOL; CONSULTING OBSTETRICIAN AND GYNÆCOLOGIST TO THE BRISTOL ROYAL INFIRMARY.

THE sudden death of Walter Carless Swayne occurred on August 8th at the age of 63, under particularly painful circumstances, at Sellack, near Hereford, at the residence of his son-in-law, Mr. R. D. Wreford-Brown. It appears that Dr. Swayne and his son had joined the family of his daughter and son-in-law, and that about 1 o'clock in the morning Mr. Wreford-Brown, who was gassed at Cambrai when in the Welsh Guards, became suddenly demented. He roused the sleeping household by firing a revolver out of his wife's bedroom window under the delusion that the house was gassed, and then entered his father-in-law's bedroom and shot him in the abdomen. Dr. Swayne's son, groping in the darkness, disarmed the assailant, but Dr. Swayne died a few hours later. He was in the full activity of practice as the leading consulting obstetric surgeon in Bristol and the West of England, and this tragic end to his career has caused profound sorrow to the whole neighbourhood, and especially to his colleagues and patients by all of whom he was greatly esteemed.

Walter Carless Swayne, the eldest son of Mr. R. A. Swayne, of Tillington Court, Hereford, one of a family of seven sons and seven daughters, was born at Mathon, near Malvern, in 1862. He was educated at King Edward's School, Birmingham, and began his professional life by entering the Bristol University College and attending the General Hospital. He at Bristol resided with his well-known uncle, Dr. Joseph Griffiths Swayne, till in 1886 he went up to Guy's Hospital for the completion of his clinical work. After taking the double qualification of the Colleges and graduating M.B. at the University of London with honours in forensic medicine, he became resident obstetric physician under Dr. Galabin and Dr. P. Horrocks. In 1891 Swayne was appointed obstetric physician at the Bristol Royal Infirmary with the charge of six beds and an out-patient clinic. He threw himself into the work and organisation of this depart-

ment with the zeal that characterised everything that he set his hands to. As time went on he so developed the restricted department till he at length evolved one of the most highly equipped obstetric and gynæcological clinics in the United Kingdom, with separate wards for lying-in cases and gynæcological operations, an extensive extern lying-in department, a large out-patient clinic, and an antenatal clinic.

He took the M.D. degree in 1894 and in the meanwhile he had been appointed Professor of Obstetrics at the University College, and was continued in this post when the University was incorporated in 1909, becoming the first professor in the chair of Obstetric Medicine. As a teacher he attracted a large following and enjoyed a high reputation as a consultant. He took the ad eundem degrees of M.D., Ch.B., and was enthusiastic in fostering a corporate spirit and in upholding the rights of graduates in Convocation, and furthermore was conspicuous in the movement to form an active graduates' association. It was largely due to his initiative that the M.Ch. is granted in obstetrics at Bristol and nothing proves more strikingly his originality than the plan of making an operation by candidates for the Mastership a part of the test for the highest degree conferred in the specialty. Without being a prolific writer he made many valuable contributions to the Bristol Medico-Chirurgical Society's Transactions and to other scientific journals. He contributed also to Latham and English's "System of Treatment," while he edited the eleventh edition of his uncle, Joseph Griffith Swayne's, well-known "Obstetrical Aphorisms." He undertook this task in response to requests so numerous as to make it clear that there was still a place which the re-issue of this popular little work could fill with advantage, and he accomplished the revision successfully, retaining the original form of the work, while rendering it valuable to modern students.

As Major Swayne, R.F.A. (T.), he will be well remembered by a very large number of those serving in the late war. When he first went to Bristol he joined the Bristol Volunteer Artillery Corps; he was nick-named "Bombardier Dick" in recognition of his military enthusiasm, and induced many other students and friends to join, and for his 20 years' steady service he was awarded the V.D. On the outbreak of war in 1914 he had much to do with the initiation of the Bristol University O.T.C., of which he was placed in command. He then threw up all professional ties and became a soldier. He raised the third line of the South Midland R.F.A., proceeding later to the camp at Churn and at Bulford. As an administrative officer he was conspicuously successful; never flinching from the hardships which he had cheerfully undertaken, he was beloved by the men under him. The refusal by the War Office to send him on service abroad was a great disappointment to him, but his none too robust health and his age made the decision reasonable and the work which he rendered at home was admirable. Towards the close of his administrative career he was appointed to the command of a battery of the New Zealand Artillery on Salisbury Plain, which he conducted overseas to France. Five years of military work away from home was a strain which told heavily but never lessened his enthusiastic activities when at the end of the war he resumed his work as professor of obstetrics and his charge of the department at the Royal Infirmary. In recognition of his self-sacrificing devotion to the military service of the country the committee of the Bristol Royal Infirmary extended the tenure of his post at the Royal Infirmary beyond the usual age-limit.

His athletic achievements in youth were considerable and he played for Guy's Hospital at Rugby football and was in the hospital rowing four. Fishing was his hobby in later years, and he was an expert with the dry fly and well known on the Monnow. He was Past Master of St. Vincent's Lodge, and had held office in the higher orders of Masonry. In 1894 he married Louisa Margaret, daughter of the late Rev. R. F. Heath, by whom he had three daughters and a son. A devoted Churchman, a loyal colleague, and ever a sympathetic friend in trouble alike to rich and poor, the death of Walter Swayne is deeply regretted by the medical profession; for his widow and children we sympathise profoundly in their grievous loss.

CHARLES LLOYD TUCKEY, M.D. ABERD.

Dr. Charles Lloyd Tuckey, who died at his house in Eastbourne on August 12th aged 70, had retired from practice and had been in poor health for the past 12 years, but continued to the end his interest in psychotherapy and in psychical research for which he was well known. His father, a medical graduate of Trinity College, Dublin, practised at Canterbury, and Lloyd Tuckey was educated at the King's School and later at King's College, London, and at the University of Aberdeen, whence he graduated M.B., C.M. in 1875, taking the M.D. in 1884. Early attracted to treatment by suggestion he studied hypnotism in 1888 under Liebault at Nancy, and may be regarded as the pioneer of hypnotic therapy in England, being closely followed by the late Dr. Milne Bramwell. Lloyd Tuckey started this work in London in 1878, and at his consulting-rooms in Green-street and Upper Brook-street, W., demonstrated his methods to medical men freely. His success in treatment was helped by his personality, for he was a man of great kindness, wide culture and literary ability, handsome presence, and sympathetic manner. He was a frequent contributor on his subjects to the medical journals and literary reviews, articles from his pen appearing in THE LANCET, *Brain*, *Practitioner*, and the *Nineteenth Century*, while his book, "Treatment by Hypnotism and Suggestion," now in the seventh edition, brought him international recognition. As the cases in this book show, he was frequently successful in the treatment of alcoholism. He was one of the founders of the Society for Psychical Research, and was for many years a member of the council of that body, of which he was afterwards elected an honorary member. His retirement from practice took place at a time when the present psychotherapeutic measures were coming before the profession, and though interested in the developments he was chary of expressing an opinion as to their remedial values after the opportunities of personal clinical trial had gone from him.

Late in life he married Beatrice Mary, daughter of the late Robert Wood Marsland, a London solicitor, who nursed him with devotion during his long illness.

DONATIONS AND BEQUESTS.—The late Mr. Walter Thomas Fremlin, of Milgate Park, Maidstone, left by will £1000 to St. Thomas's Hospital, £500 to the East Kent General Hospital, Maidstone, and £500 to the Kent County Ophthalmic Hospital.—Mr. John Douglas Oliver, of Morpeth, bequeathed £3000 to the Morpeth Cottage Hospital and District Nursing Association.—Colonel John Chadwick Barlow, M.V.O., J.P., of Bury and Darley Dale, Yorkshire, a director of the Bleachers' Association, Ltd., left the residue of his property, amounting to nearly £200,000, to be applied within 21 years of his decease for such charitable purposes within the United Kingdom of Great Britain and Ireland, India, or any British State, Colony, or Dependency as his executors in their absolute discretion should think fit, stating "my desire being that the same shall not be utilised for sectarian or party political purposes, and that they shall have regard to such charitable purposes as I have been interested during my lifetime."—The £600 damages recently awarded to them in the High Court for libel and slander has been awarded by Messrs. J. Lyons and Co., Ltd., to the following charities: the London Hospital £200, Paddington Green Children's Hospital £200, West London Hospital £150, and £50 to the Parent Hospitals of Shropshire and the Border Counties.—On "Alexandra Day" in Liverpool the total sum realised on June 20th was £5676, and of this sum the Liverpool Child Welfare Association received £1596, the Royal Liverpool Children's Hospital £1111, and the Royal Liverpool Children's Hospital, Heswall Branch, £489.—Mrs. Ada Ellen Robertson, of Kensington, W., who left £15,620, apart from a small annuity, practically gave all other of her property to the Hospital for Sick Children, Great Ormond-street.

Medical News.

POST-GRADUATE COURSES IN TUBERCULOSIS.—The following courses have been arranged by the Joint Tuberculosis Council: (1) A fortnight's course in the pathology and bacteriology of tuberculosis, conducted by Dr. Roodhouse Gloyne at the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, from Monday, Sept. 21st, to Saturday, Oct. 3rd. The class will meet in the mornings or in the afternoons according to arrangement. Class limited to six members. (2) A course in non-pulmonary tuberculosis beginning Monday, Sept. 28th, ending Saturday, Oct. 3rd. Monday, Sept. 28th, at Heatherwood Hospital, Ascot (charabancs from and to London arranged). Tuesday, Sept. 29th, at Queen Mary's Hospital, Carshalton. Wednesday, Sept. 30th: Morning, diseases of the skin department, London Hospital; afternoon, the Royal College of Surgeons, Lincoln's Inn-fields. Thursday, Oct. 1st: Morning, diseases of the skin department, London Hospital; afternoon, All Saints Hospital for Genito-Urinary Diseases. Friday, Oct. 2nd, and Saturday, Oct. 3rd, the Wingfield Orthopædic Hospital, Oxford. The class will be limited to 30 members. Early application should be made to William Brand, acting Hon. Secretary, 19, Brunswick-square, Camberwell, S.E. 5, who will supply all further particulars.

THE SPAHLINGER TREATMENT.—Mr. Spahlinger has returned to Geneva to prepare a sufficient quantity of vaccine and serum to immunise a number of calves, as arranged with the Committee of Agriculturists and Veterinary Surgeons which has been formed at Crewe. These tests and controls are to take place in October. The animals are already being selected, and it is expected that Mr. Spahlinger will come to Crewe to make the injections. The results will be observed by a committee of agriculturists and veterinary surgeons, with whom will be associated the Agricultural Committee of the House of Commons, and a representative of the Minister of Agriculture. In the meantime the production of further supplies of vaccine and serum for human beings will be temporarily suspended.

MIDDLESEX HOSPITAL.—The recently issued report for 1924 records that owing to the closing of two wards there was a diminution of 364 in the number of in-patients admitted. Nevertheless, 5188 in-patients were treated. Their average weekly cost was £4 1*s.* 1*d.*, an increase of 2*s.* 3*d.* upon the preceding year. At 38,259 there was an increase of 2440 in the total of in-patients. Grateful note is made of the steady growth of the St. Marylebone Associated Hospitals' League, with a membership of about 20,000, which yielded during the year a total of £2748. A warm tribute is paid to the services of Dr. Campbell Thompson, physician to the department of nervous diseases and lecturer in neurology, upon his resignation from the active staff after an association of 36 years as house physician, dean of the medical school, and in the department of nervous diseases. Attention is drawn to the importance of endowing the professorial chairs attached to the hospital's medical school; of these seven chairs only three have yet been endowed. The period of training for nurses and probationers has been increased from three to four years, but the question of establishing a nurses' preliminary training school has been postponed pending the provision of permanent accommodation. The report of the Cancer Charity of the hospital shows that 712 patients were admitted, an increase of 79, and that the percentage of occupied to available beds was very nearly 95 per cent. There is thus practically no bed-wastage. The rebuilding fund now exceeds £200,000.

HARROGATE ROYAL BATH HOSPITAL.—At this hospital of 150 beds, also styled the National Hospital for Rheumatic Diseases, a new laboratory was opened by Princess Mary, Viscountess Lascelles, on August 10th, when Lord Harewood, the patron, presided over a large meeting in the main hall of the hospital, and pointed out that £5500 were still required to make up the £12,000 appealed for last year. That appeal was for a centenary fund for further equipment of the hospital with adequate accommodation—e.g., for additional nursing staff, surgical, radiological, and dental departments. The new laboratory, which cost £3500, may demand an additional £1000 for equipment, towards which £500 has been subscribed by Sir Edward Brotherton, Bart., while £1000 has been presented by the hon. treasurer of the hospital, Mr. Walter Freeman, as the nucleus of an endowment fund for laboratory purposes.

After Princess Mary had declared the new laboratory open, a short address was given by Prof. Arthur Hall, in which the necessity in medicine for distant vision was emphasised, an important feature of such vision being the furnishing of adequate facilities for laboratory work. After the votes of thanks to Her Royal Highness, Dr. G. L. Kerr Pringle, senior physician to the hospital, drew the attention of the audience to the widespread crippling caused by the group of chronic rheumatic diseases, and the justification for more determined efforts in research.

Princess Mary then inspected the new building, where various aspects of the work of the laboratory were demonstrated by Dr. Sinclair Miller and Dr. F. B. Smith, the pathologists to the hospital. Hitherto this branch of work has been carried on with very limited facilities and accommodation. The new building comprises a waiting-room, a consulting-room, four workrooms for bacteriology and chemistry, a preparation-room, and a cleansing-room, and represents the first step in materialisation of a scheme of development which should make the equipment of the hospital as adequate as that of any hospital in the kingdom. There is now at this hospital ample opportunity both for routine investigation of individual patients and for organised research into the problems involved in the ætiology and treatment of chronic arthritis and allied conditions which still remain obscure.

DEATH OF A SOUTH AFRICAN PRACTITIONER.—The death on July 19th is announced of Dr. Peter Christian de Wet, of Cradock, Cape Province, where he had practised for 34 years. He was the local medical officer of health and had been largely concerned with the establishment of the Cradock Hospital 25 years ago.

KEIGHLEY'S NEW WATER-SUPPLY.—The Marquess of Hartington on August 11th performed the inauguration ceremony of the Keighley Corporation's new Sladen Valley waterworks. The scheme was begun in 1910, and has cost £570,000. The new waterworks will add an available supply of a million gallons a day in addition to the existing 1,600,000 gallons a day from the Watersheddles reservoir. The gathering-ground of the new supply comprises an area of 1080 acres.

THE LATE DR. A. W. ATKINSON.—Arthur William Atkinson, M.B., Ch.B. Edin., died at his residence in Crewe on August 6th from pneumonia. Born in Crewe in 1881, he was the youngest son of the late Dr. James Atkinson, first mayor of Crewe. He studied at the University of Edinburgh and at Heidelberg, graduating M.B., Ch.B. Edin. in 1906, and later obtained the certificate with distinction of the London School of Tropical Medicine. He served with great credit in the Boer War, and for some time was medical officer on the West African Medical Staff on the Gold Coast. On the death of his brother, Dr. J. R. Atkinson, he gave up his Government appointment to take up practice in Crewe. A keen lover of sport, he was also a prominent Freemason. Dr. Atkinson, who leaves a widow and a daughter, was highly appreciated as a family physician.

MANCHESTER'S SEWAGE DISPOSAL.—On August 12th a Ministry of Health inquiry was held in the Manchester Town Hall into the application of the corporation to borrow £465,000 for an extension of the sewage disposal scheme. The cost of the extension will be equal to 2½*d.* in the rates. The proposed improvements are designed to meet drainage demands for the next 50 years. Additional facilities will be provided for the disposal of sludge, which at present is taken by boat down the Ship Canal and dumped into the sea, and over 200,000 tons a year are disposed of in this way. It was stated that later it was hoped that the sludge would be so treated as to form a product for agricultural purposes.

Appointments.

MORTIS, R. H., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon, Hertford County Hospital.

MUIR, T. J., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Pickering District (North Riding).

Vacancies.

For further information refer to the advertisement columns.

Birmingham University.—Lecturer in Bacteriology. £450.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. £120.

Bootle Borough Hospital.—H.S. At rate of £125.

Brighton, New Sussex Hospital.—H.S. £50.

Bristol General Hospital.—H.P.'s, H.S., &c. Each at rate of £80.

Bristol Royal Infirmary.—Sen. Res. M.O. At rate of £200. H.P.'s, H.S.'s, &c. At rate of £80. Dental S. At rate of £116.

Canterbury, Kent and Canterbury Hospital.—Hon. S. to Ear, Nose, and Throat Dept. Also Third Res. M.O. At rate of £125.
Devonport, Royal Albert Hospital.—H.S. £150.
Dumfries, Crichton Royal Mental Hospital.—Asst. P. £350.
Glamorgan County Mental Hospital, Bridgend.—Temp. Asst. M.O. At rate of £300.
Gloucester Institution and Infirmary, Great Western-road.—M.O. £150.
Hertford County Hospital.—H.P. At rate of £150.
Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £200.
Liverpool, Royal Southern Hospital.—Hon. Asst. P.
Manchester, Monsall Hospital for Infectious Diseases.—Second Asst. M.O. £375.
Manchester Royal Children's Hospital, Pendlebury.—Asst. M.O. At rate of £150. Res. Surg. O. At rate of £80.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Medical Society of London.—Secretary.
Plymouth Borough.—Asst. M.O.H. £600.
Poplar Hospital for Accidents, East India Dock-road, Poplar, E.—Sen. Res. O. £200.
Preston County Borough.—Asst. Sch. M.O. £600.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.
Royal Eye Hospital, St. George's Circus, S.E.—H.S.
Royal Free Hospital, Gray's Inn-road, W.C.—Obstet. Asst. At rate of £100.
Salop County Council.—Asst. M.O. £600.
Southampton, Borough Isolation Hospital.—Res. M.O. £360.
Staffordshire Mental Hospital, Cheddleton, Leek.—Jun. Asst. M.O. £350.
Stockport Infirmary.—Two Res. H.S.'s. Each £175.
Sudan Government, Wellcome Tropical Research Laboratories, Khartoum.—Asst. Bacteriologist. £E.720.
Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of Chest.—Jun. Res. M.O. At rate of £250.
West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each at rate of £100.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments for Certifying Factory Surgeons: East Grinstead, Sussex; Petersfield, Hants; Colwyn Bay, Denbigh.

Births, Marriages, and Deaths.

BIRTHS.

DE MOWBRAY.—On August 15th, at Grosvenor House, Lymington, Hants, the wife of Ralph M. de Mowbray, F.R.C.S., of a son.
EVANS.—On August 13th, at Glanfraed, Brundall, Norwich, the wife of Dr. Henry W. Evans, of a son.
FRASER.—On August 9th, at Garlands, Redhill, the wife of Dr. M. W. Fraser, W.A.M.S., of a daughter.
WOOLER.—On August 8th, at St. John's House, Cleckheaton, Yorks, the wife of Dr. E. W. Nowell Wooler, of a daughter.

MARRIAGES.

CHARLES—FISHER.—On August 6th, at St. Michael and All Angels' Church, Butcombe, Somerset, John Roger Charles, M.D., F.R.C.P., to Hilda Mary Fisher.
KITCHIN—LANDER.—On August 12th, in London, Derek Harcourt Kitchin to Mary Kathleen Forsaith Lander, M.Sc., M.B., B.S.

DEATHS.

ALEXANDER.—On August 12th, at Kingsdown-road, Epsom, Thomas Anderson Alexander, M.D., in his 67th year.
HULKE.—On August 15th, at Admiralty House, Deal, Frederick Backhouse Hulke, J.P., M.R.C.S., L.R.C.P., aged 65 years.
WARNER.—On August 15th, at Clacton-on-Sea, after a long illness contracted during the war, Cuthbert Warner, B.A., M.B., B.Ch., late surgeon in the Royal Navy.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, August 24th, to SATURDAY, August 29th.—ALL SAINTS HOSPITAL, Vauxhall Bridge-road, S.W. Clinical demonstrations Wednesday evening, Thursday afternoon and evening, and Saturday afternoon. Wed., 2 P.M., Mr. J. C. Ainsworth Davis on Tuberculin in the Treatment of Urological Tuberculosis.—QUEEN MARY'S HOSPITAL, Stratford, E. Intensive Course in General Medicine, Surgery, and the Special Departments. First week as per syllabus. Morning and afternoon sessions. Fee £2 2s. for week or £3 3s. for two weeks.

Notes, Comments, and Abstracts.

NEW REGULATIONS FOR PRESERVATIVES IN FOOD.

CERTAIN new regulations under the Sale of Food and Drugs Acts have been laid down and circulated to town clerks, clerks to councils, and port sanitary authorities, based on the recommendations of the Departmental Committee on the Use of Preservatives and Colouring Matters in Food. The Regulations provide for the prohibition of the importation and sale of articles of food to which preservatives and other specified substances have been added, and in particular an important section deals with food importations. The enforcement of the edict with respect to meat and fish is to be left to the local authorities, who are not precluded from taking action with regard to other articles, though care has been taken in the Regulations to avoid any duplication of jurisdiction as between them and officers of Customs and Excise.

One of the recommendations of the Departmental Committee was, that any prohibitions or limitations imposed by Regulations should bind the courts in proceedings taken under the Sale of Food and Drugs Acts. In this way the Committee went on to say: "Traders and the public generally would know what was permissible and what was not, and there would be no conflict of expert evidence on the question whether the amount of preservative or colouring matter was or was not injurious to health. The only point at issue would normally be whether the preservative or colouring matter found in the food, or the amount of it, was in contravention of the Regulations." The Departmental Committee recommended a change in the law in this direction, and the Minister of Health is entirely in agreement with the view of the Committee, but it has not been found practicable to introduce legislation to give effect to the recommendation. The Minister commends the matter, however, to the consideration of local authorities and suggests that proceedings should not be taken under the Sale of Food and Drugs Acts in respect of the addition of preservatives to food except where such addition would be contrary to the provisions of the Regulations. "In this connexion," the Minister's communication runs, "local authorities will no doubt have regard to the fact that in conformity with the recommendation of the Committee, the Regulations have been framed so as to allow time for the adjustment of methods and processes and the clearance of existing stocks, before they come into operation."

No Regulation is made concerning the question which has arisen as to the power to give incriminated persons an opportunity to furnish explanations, the matter being left to the discretion of the local authorities. But the local authorities are reminded that they have power instead of, or in addition to, taking proceedings against a retailer, to take proceedings against the manufacturer or wholesaler by whom the article was previously sold. It is suggested that this provision might be used with advantage in many cases where an article of food is sold in a sealed container bearing the name and address of the manufacturer or of the wholesale dealer responsible for its distribution.

The Regulations come into force on Jan. 1st, 1927.

Appended are two schedules. The first enumerates (1) the articles of food which may contain preservative and the nature and proportion of the preservative in each case; and (2) the colouring matters which may not be added to articles of food. In these forbidden sophistications are found the colouring matters derived from antimony, arsenic, and other metals the use of whose salts is found perilous. It will be seen from the first part of this schedule that sulphurous acid and benzoic acid will be the only preservatives that can be employed legally after Jan. 1st, 1927, and undoubtedly the exclusion of boron will give rise to discussion. The Regulations must be welcome, for the simple reason that they will baffle the ingenuity of those who are still able to disguise the presence of putrefaction in our foodstuffs, and in this way to escape the necessity of cleanly storage and transport and careful handling; but it will be seen that considerable difficulty will arise unless new arrangements are made both in shops and households with respect to the protection of perishable material. Under this large abolition of chemical preservatives, though no one can regret the unqualified veto upon dangerous minerals and formaldehydes, there will be great difficulty during summer periods of protecting many articles of food from putrefaction, save in great establishments where cold-storage plants are in existence. As Mr. P. N. Panton has written in the *Times* this week, "We shall have to ensure a more rapid carriage of foodstuffs, a greater cold-storage accommodation, and an installation of refrigerators in the home as widely distributed as in the United States."

The second schedule gives instructions for the labelling of articles of food containing preservatives, and also for the labelling of the preservatives themselves.

THE FIRST SCHEDULE.

PART I.—*Articles of Food which may contain Preservative and Nature and Proportion of Preservative in each case.*

The articles of food specified in the first column of the following table may contain the preservative specified in the second column in proportions not exceeding the number of parts (estimated by weight) per million specified in the third column :—

Food.	Preservative.	Parts per million.
1. Sausages and sausage-meat containing raw meat, cereals and condiments	Sulphur dioxide	450
2. Fruit and fruit pulp, not dried :—		
(*a*) Strawberries and raspberries	,,	2000
(*b*) Other fruit	,,	1500
3. Dried fruit :—		
(*a*) Apricots, peaches, nectarines, apples, and pears	,,	2000
(*b*) Raisins and sultanas	,,	750
4. Unfermented grape-juice and non-alcoholic wine made from such grape-juice if labelled in accordance with the rules contained in the Second Schedule to these Regulations	Benzoic acid	2000
5. Other non-alcoholic wines, cordials, and fruit juices, sweetened or unsweetened	Either sulphur dioxide	350
	or benzoic acid	600
6. Jam (including fruit jelly prepared in the way in which jam is prepared, but not including marmalade made from citrous fruits)	Sulphur dioxide	40
7. Candied peel	,,	100
8. Sugar (including solid glucose)	,,	70
9. Corn syrup (liquid glucose)	,,	450
10. Gelatine	,,	1000
11. Beer	,,	70
12. Cider	,,	200
13. Alcoholic wines	,,	450
14. Sweetened mineral waters	Either sulphur dioxide	70
	or benzoic acid	120
15. Brewed ginger beer	Benzoic acid	120
16. Coffee extract	,,	450
17. Pickles and sauces made from fruit or vegetables	,,	250

PART II.—*Colouring Matters which may not be added to Articles of Food.*

1. *Metallic Colouring Matters.*—Compounds of any of the following metals : Antimony, arsenic, cadmium, chromium, copper, mercury, lead, and zinc.

2. *Vegetable Colouring Matter.*—Gamboge.

3. *Coal Tar Colours.*

Number in colour index of Society of Dyers and Colourists, 1924.	Name.	Synonyms.
7	Picric acid.	Carbazotic acid.
8	Victoria yellow.	Saffron substitute ; dinitrocresol.
9	Manchester yellow.	Naphthol yellow ; martius yellow.
12	Aurantia.	Imperial yellow.
724	Aurine.	Rosolic acid ; yellow coralline.

THE SECOND SCHEDULE.

Labelling of Articles of Food containing Preservative and of Preservatives.

1. The articles of food containing preservative to which the Rules as to labelling set out in this Schedule apply are sausages, sausage-meat, coffee extract, pickles and sauces, and (where the proportion of benzoic acid exceeds 600 parts per million) grape-juice and wine.

2. (1) Where any of the said articles of food contains preservative it shall bear a label on which is printed the following declaration or such other declaration substantially to the like effect as may be allowed by the Minister :—

> (a) CONTAIN(S) PRESERVATIVE.

(2) The declaration shall be completed by inserting at (*a*) the word "This" or "These," followed by the name of the food as used in paragraph 1 of this Schedule.

(3) In the case of grape-juice or wine to which these Rules apply there shall be added to the declaration the words "and is not intended for use as a beverage."

3. (1) An article sold as a preservative shall bear a label on which is printed the following declaration or such other declaration substantially to the like effect as may be allowed by the Minister :—

> THIS PRESERVATIVE CONTAINS (a) PER CENT. OF SULPHUR DIOXIDE.

(2) Where the article contains benzoic acid the words "Benzoic Acid" shall be substituted for the words "Sulphur Dioxide."

(3) The declaration shall be completed by inserting at (*a*) in words and figures, excluding fractions (e.g., "seventy (70)"), the true percentage of the sulphur dioxide or benzoic acid present in the article.

4. The prescribed declaration shall in each case be printed in dark block type upon a light coloured ground within a surrounding line and no other matter shall be printed within such surrounding line. The type used shall be not less than one-eighth of an inch in height, or, in the case of grape-juice or wine to which these Rules apply, one-sixteenth of an inch in height.

5. The label shall be securely affixed to the article or be part of or securely affixed to the wrapper or container, and in any case shall be so placed as to be clearly visible. If the article bears a label containing the name, trade mark, or design representing the brand of the article or the name and address of the manufacturer or dealer the prescribed declaration shall be printed as part of such label.

6. No comment on or explanation of the prescribed declaration (other than any direction as to use in the case of a preservative) shall be placed on the label or on the wrapper or container.

THE PREVALENCE OF VENEREAL DISEASE.

THERE is no compulsory notification of venereal cases, so that the figures recently circulated as to the numbers of cases of venereal disease dealt with for the first time at treatment centres in England and Wales during each of the years from 1919 to 1924 are of interest.

Year.	Cases.*	Attendances.†	Year.	Cases.*	Attendances.†
1919	82,797	1,002,791	1922	56,347	1,560,568
1920	85,531	1,488,514	1923	55,945	1,605,617
1921	66,820	1,612,592	1924	54,380	1,645,415

* No. of cases dealt with for the first time at treatment centres in England and Wales during the year and found to be suffering from venereal disease.

† Total No. of attendances at treatment centres during the year.

The total number of attendances at the centres during each of those years does not bear out the pessimistic estimates that have been very usual.

CRESER'S PATENT DEODORISER AND DISINFECTANT CONTAINER.

WE have received from Mr. A. T. Creser, of 3, Manor Park, Richmond, Surrey, an apparatus designed for use in deodorising and disinfecting w.c.'s, which seems to possess decided advantages both of efficiency and economy. It consists of a perforated non-rustable metal cylinder containing a disinfectant in a solid but soluble form. The cylinder is simply and easily fixed under the rim of the w.c. pan, and in the track of the high-velocity water which washes out a certain amount of the disinfectant contained in the cylinder. On the rush of water ceasing, the drainage of the container automatically gives to the water in the pan, after the valve is closed, a strong solution of the disinfectant, which remains in the pan until the water is again set flowing. The apparatus can be refilled in less than 15 seconds, each refill will last from two to three months, and the cost of usage is approximately ½*d.* a week.

AFTER 50 years at 1, Fenchurch-avenue, E.C. 3, Messrs. F. W. Berk and Co., Ltd., the well-known chemical manufacturers, are removing their head offices on Monday, August 24th, to larger premises at 106, Fenchurch-street, London, E.C. 3.